

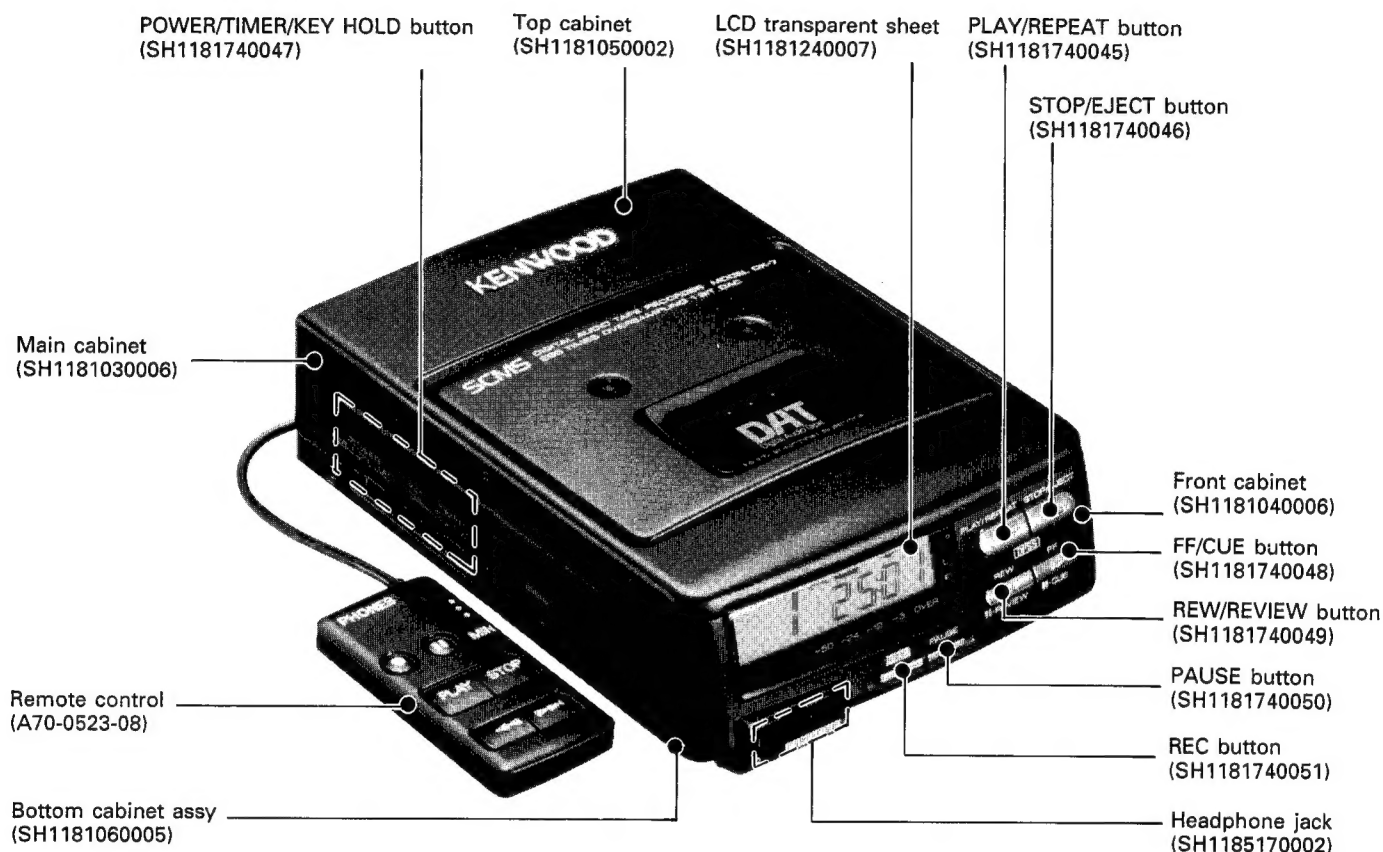
# DIGITAL AUDIO TAPE DECK

# DX-7/BP-A7

## SERVICE MANUAL

# KENWOOD

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B51-4248-00 (O) 3145



**Photo is DX-7.**

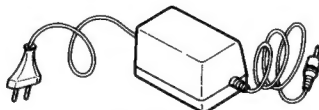
### Accessories

(1) Remote controller



(A70-0523-08)

(2) AC adaptor



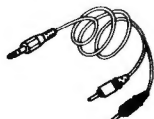
(W08-0002-08) K  
(W08-0003-08) E,M,Y  
(W08-0005-08) T

(3) Digital connection Cord



(E30-2642-08) Y,M  
(SH1185420004) K,E,T

(4) Analog connection cord



(E30-2641-08) Y,M  
(SH1185420005) K,E,T

(5) Digital-use adaptor plug



(E69-0001-05)

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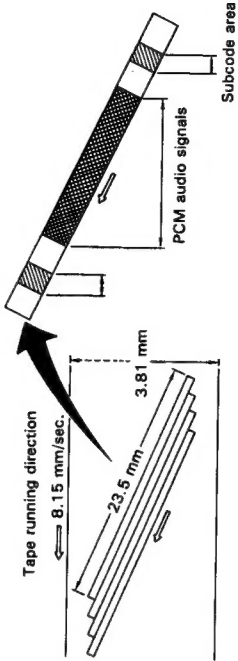
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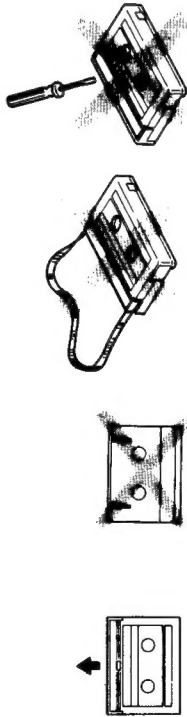
SPECIFICATIONS .....BACK COVER

■ DAT tape recording system



Use of DAT cassette tapes

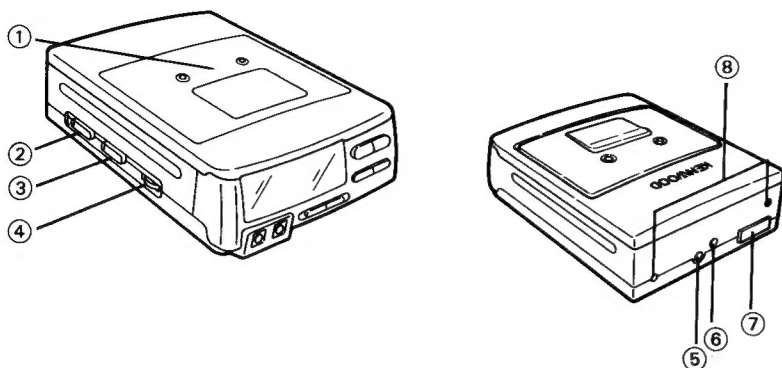
- Tapes cannot be turned over and played on the other side.
- Tapes are manufactured with a sealed construction. Do not try to forcefully open the tape cover or pull the tape from the case, and never attempt to disassemble the tape case. The tape may become slack or damaged.
- Do not repeatedly insert and remove a tape without playing or recording the tape. The tape may become slack or damaged.
- After use, completely rewind the tape and store it properly. The tape may be damaged if stored without being fully rewound.
- Always place a tape in its case for storing.



■ Accidental erasure prevention side door

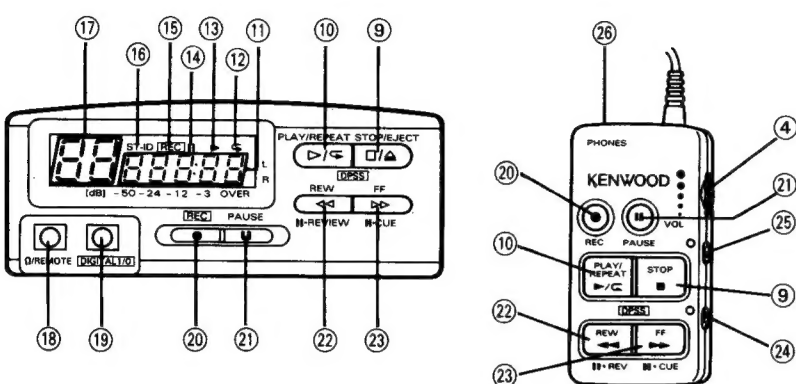


## Controls, connectors and indicators



- |                                          |                             |
|------------------------------------------|-----------------------------|
| ① Cassette holder                        | ⑭ [ II ] Pause indicator    |
| ② POWER switch                           | ⑮ [REC] Recording indicator |
| ③ KEY HOLD/TIMER switch                  | ⑯ [ST-ID] indicator         |
| *④ VOLUME control knob                   | ⑰ Tune number display       |
| ⑤ DC IN jack                             | ⑱ PHONES/REMOTE jack        |
| ⑥ Threaded hole for accessory attachment | ⑲ DIGITAL I/O jack          |
| ⑦ System connection jack                 | *⑳ REC (Record) button      |
| ⑧ Accessory attachment guide hole        | *㉑ PAUSE button             |
| ⑨ STOP/EJECT button                      | *㉒ REWIND/REVIEW button     |
| *⑩ PLAY/REPEAT button                    | *㉓ FF/CUE button            |
| ⑪ Total elapsed time display             | ㉔ HOLD switch               |
| ⑫ [ ] Repeat indicator                   | ㉕ REC HOLD switch           |
| ⑬ [ ] Play indicator                     | ㉖ PHONES jack               |

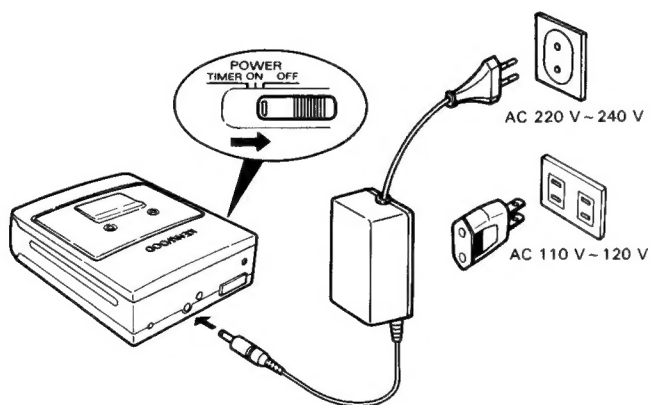
Keys marked with an asterisk "\*" have the same function on both the main unit and the remote controller.



## Power source

### ■ How to use the unit with the supplied AC adaptor

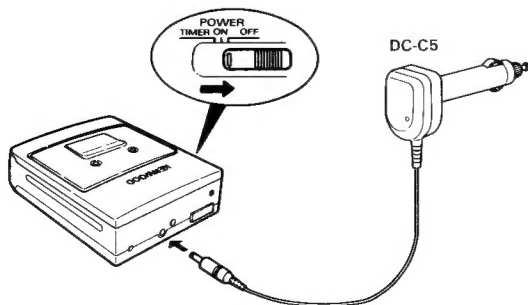
- Insert the plug of the AC adaptor into the [DC IN] jack on the main unit's rear panel, then connect the power plug to a household AC power outlet.
  - Always set the [POWER] switch to OFF before connecting the AC adaptor.
- When disconnecting the AC adaptor as well, be sure to first turn the [POWER] switch OFF. (Not doing so may damage the tape or rotating heads.)



### ■ Using a car cigarette lighter

Use the separately sold DC-C5 car battery adaptor.

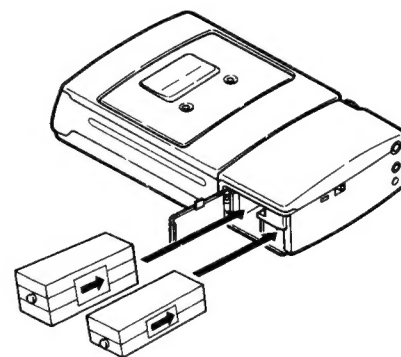
- Turn the [POWER] switch OFF before connecting.
- Also, be sure to set the [POWER] switch to OFF before turning the car's ignition key OFF.



### ■ Using rechargeable batteries

Use the separately sold A/D converter (BP-A7).


- Align the A/D converter with the main unit's accessory attachment guide hole and attach. Secure the A/D converter in place using the accessory attachment screw.
- Always turn the [POWER] switch OFF before inserting/removing batteries or making connections.
- Paying close attention to match the insertion direction with the arrows, insert two NB-8 rechargeable battery packs (supplied in the BP-A7 kit) into the A/D converter/battery pack unit supplied in the BP-A7 kit.

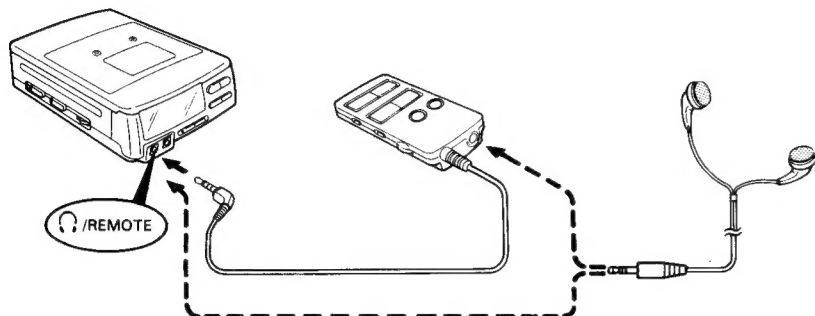


- Recharging period:** When the batteries run down, "Lo" appears in the display area to indicate that operation will soon stop. Recharge the batteries at this time for continued operation.
- For maximum battery life:** One characteristic of Ni-Cd batteries is that their battery life becomes shorter if they are repeatedly recharged before being completely used up. If this occurs, battery life can be returned to normal by repeatedly letting the batteries completely run down before recharging.

## Connections


### Headphone connection

- Connect separately sold headphones (use headphones equipped with a 3.5 mm diameter stereo miniplug) to the main unit's [  /REMOTE] jack or the remote controller's [PHONES] jack.
- Always turn the volume down before plugging or unplugging the headphones.
- Sound volume adjustment**  
Adjustment using the main unit:  
Set the remote controller's [VOL] control to maximum and adjust the volume using the main unit's [VOLUME] control.  
Adjustment using the remote controller:  
Set the main unit's [VOLUME] control to about "8" and adjust the volume using the remote controller's [VOL] control.

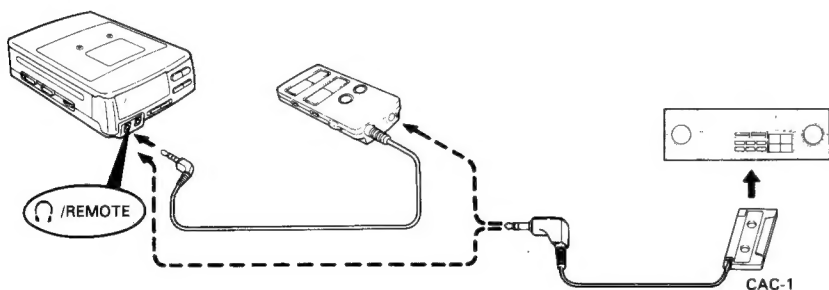


### Connection to a car stereo


Use the separately sold Car Audio Cassette adaptor (CAC-1).

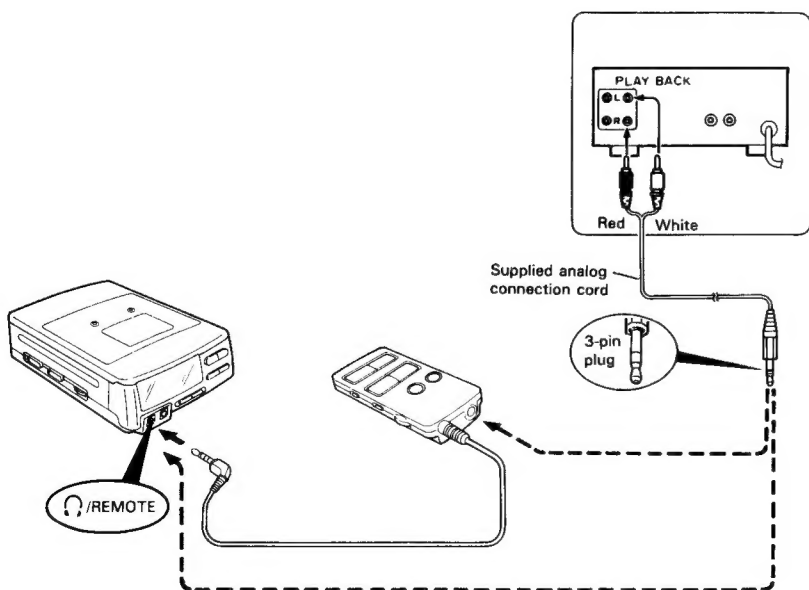
Insert the plug of the CAC-1 into the main unit's [  /REMOTE] jack or the remote controller's [PHONES] jack.

- Adjust the sound volume using the car stereo's volume control.  
Set the main unit's [VOLUME] control to about "8" and set the remote controller's [VOL] control to maximum.



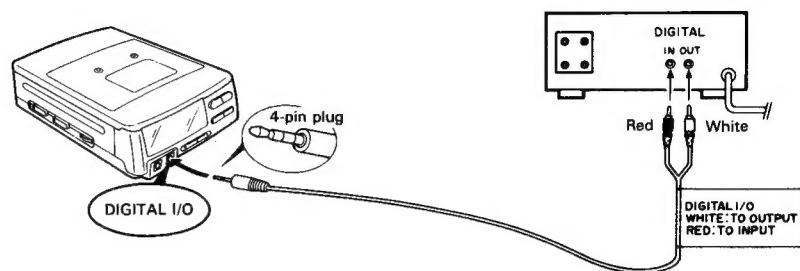
### Connection to an amplifier's analog input jacks

- Turn off the power to both the amplifier and this unit before making connections.
- Using the supplied analog connection cord, connect the 3-pin miniplug to this unit's [  /REMOTE] terminal.  
Connect the other end of the cord to the amplifier's external input jacks (AUX jacks, TAPE PLAY jacks, etc.).  
Connect the red plug to the "R" (right channel) input jack and the white plug to the "L" (left channel) input jack.
- Sound volume adjustment:**  
Set the main unit's [VOLUME] control to about "8".  
When connecting to the supplied remote controller, turn the remote controller's [VOL] control to maximum.  
Adjust the sound volume using the amplifier's volume control.



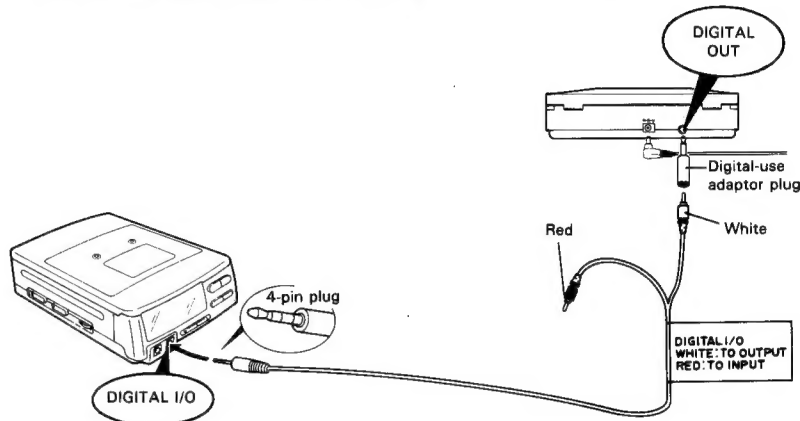
### Connection to a component equipped with digital I/O jacks (coaxial)

- Turn off the power to both the amplifier and this unit before making connections.
- Using the supplied digital connection cord, connect the 4-pin miniplug to this unit's [DIGITAL I/O] terminal.  
Connect the red plug to the component's (amplifier, etc.) coaxial input jack and connect the white plug to the coaxial output jack.
- Make sure the plugs are inserted securely. Improper connection may cause sound dropouts or noise.
- Connection to optical digital jacks is not possible.



### Connection to a portable CD player equipped with a digital output jack

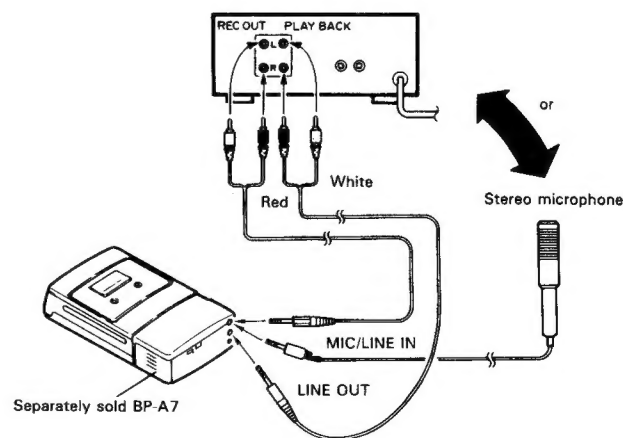
- When connecting to a portable CD player (such as the DPC-90) equipped with a digital output jack, use the supplied digital-use adaptor plug.



### Connection for analog recording

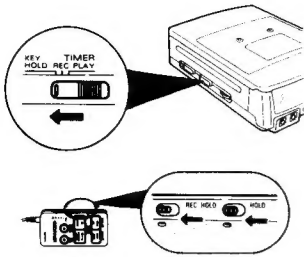
Use the separately sold A/D converter (BP-A7).

- Turn off the power to both the amplifier and this unit before making connections.
- Connect the A/D converter unit (supplied in the BP-A7) to this unit.
- Connect the A/D converter unit's [MIC/LINE IN] jack to an amplifier's [TAPE REC] jacks or a stereo microphone.
- Connect the A/D converter unit's [LINE OUT] jack to an amplifier's external input jacks (AUX jacks, TAPE PLAY jacks, etc.).  
Both input and output connections should be made with the red plug connected to the amplifier's "R" (right channel) jack and the white plug connected to the "L" (left channel) jack.
- Use the A/D converter unit's [MIC/LINE] switch to MIC or LINE, depending on the connection.
- Adjust the playback sound volume using the amplifier's volume control.
- When using a microphone, use a stereo microphone equipped with a 3.5 mm diameter stereo miniplug. If you use a monaural microphone, the sound will be recorded on the left channel only.





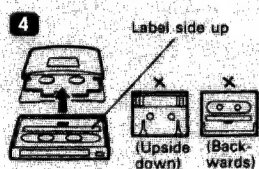
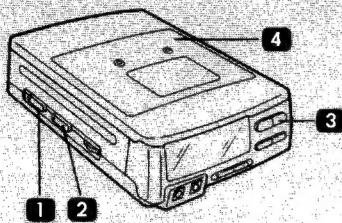
## Key Hold function



Setting this function prevents incorrect operation of the unit even if an operation button is accidentally pressed.

- When you set the main unit's [KEY HOLD/TIMER] switch to "HOLD", the unit ignores any button operation.
- When you set the remote controller's [HOLD] switch to the "●" position (so that the white indicator appears), operation of any of the remote controller's buttons is ignored.
- When you set the remote controller's [REC HOLD] switch to the "●" position (so that the white indicator appears), operation of the remote controller's [REC] button is ignored.

## Inserting a tape



- A tape cannot be inserted when the power is off.
- 1 Set the [POWER] switch to "ON".
- 2 Set the [KEY HOLD/TIMER] switch to "PLAY".
- 3 Press the [STOP/EJECT] button. "OPEN" appears on the display and the cassette holder opens.
- 4 Insert a tape into the cassette holder.
- Press the cassette holder closed until it locks. After a tape is loaded, the unit enters stop mode.
- To remove the tape, press the [STOP/EJECT] button again.

- Auto Power Off function: If 10 minutes elapse with the unit in stop mode, the power automatically turns off. To turn the power back on, turn the [POWER] switch OFF and then ON again.

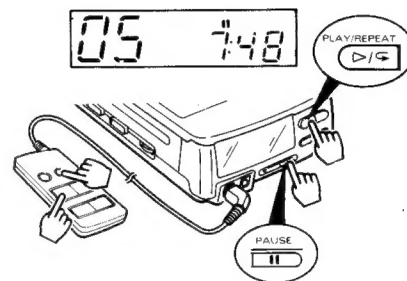
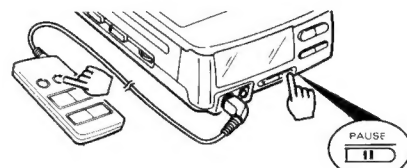
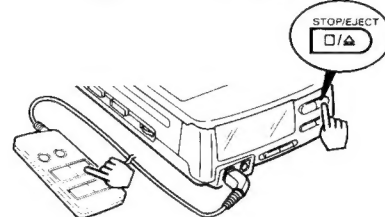
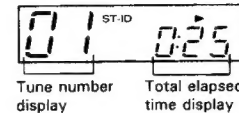
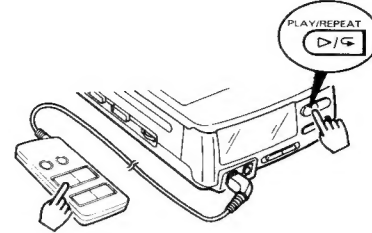
- A tape cannot be inserted when the power is off.
- 1 Set the [POWER] switch to "ON".
- 2 Set the [KEY HOLD/TIMER] switch to "PLAY".
- 3 Press the [STOP/EJECT] button. "OPEN" appears on the display and the cassette holder opens.
- 4 Insert a tape into the cassette holder.

- Press the cassette holder closed until it locks. After a tape is loaded, the unit enters stop mode.
- To remove the tape, press the [STOP/EJECT] button again.

## To playback a DAT cassette (Basic operation)

First load a tape into the unit (see page 14).

Operation is possible with either the main unit or the remote controller.



### To play a tape

- Press the [PLAY/REPEAT] button.
- Tapes recorded in extended play mode cannot be played. If you attempt to play such a tape, "NO PLAY" appears on the display.
- If the playback position is in the middle of a tune when the tape is loaded, the tune number for that tune will not be displayed. Tune numbers will be displayed from the beginning of the next tune.

### To stop playback

- Press the [STOP/EJECT] button.
- To resume playback, press the [PLAY/REPEAT] button again.

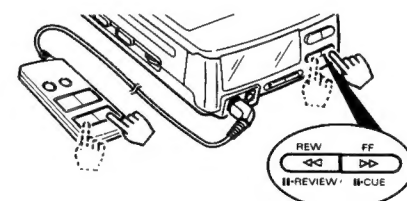
When finished, remove the tape from the unit and set the [POWER] switch to OFF.

### To pause playback

- Press the [PAUSE] button.
- To resume playback, press the [PAUSE] button again or press the [PLAY/REPEAT] button.
- If five minutes elapse with the unit in pause mode, the unit automatically enters stop mode.

### To fast-forward or rewind the tape

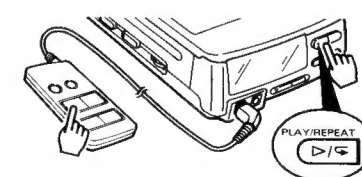
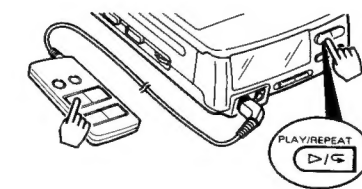
- In stop mode, press the [FF/CUE] button to fast-forward the tape and press the [REW/REVIEW] button to rewind the tape.
- Auto Rewind function: When the last tune on the tape finishes playing, the tape automatically rewinds to the beginning and then stops. The same operation occurs even if an END-ID is recorded. (See page 23.)



### To skip to a desired tune (DPSS function)

By pressing the [FF/CUE] or [REW/REVIEW] button one or more times, you can skip to a subsequent or previous tune corresponding to the number of presses.

- During playback, pressing the [FF/CUE] button once skips to the beginning of the next tune.
- During playback, pressing the [REW/REVIEW] button once skips to the beginning of the current tune.



### Cue/Review function

This function allows you to fast-forward (cue) or rewind (review) while listening to the tape sound.

- To cue, press the [PAUSE] button and then press the [FF/CUE] button.
- To review, press the [PAUSE] button and then press the [REW/REVIEW] button.
- When you reach the location you want to listen to, press the [PLAY/REPEAT] button.

### Repeat play

This function repeatedly plays the entire tape from the first tune to the last.

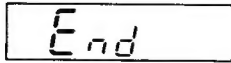
- During playback, press the [PLAY/REPEAT] button again. When the last tune finishes playing or when an END-ID is found, the tape automatically rewinds to the beginning and playback starts again from the first tune. The tape is repeated a maximum of 10 times until the [STOP/EJECT] button is pressed.
- To stop repeat playback: Press the [PLAY/REPEAT] button again so that the "G" indicator goes out, or press the [STOP/EJECT] button to stop the tape.

### Display example

When the tape is stopped at the beginning



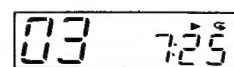
When the tape is stopped at the end



- When the beginning of the displayed tune is reached, "▶" appears on the display and playback begins.
- If the [PAUSE] button is pressed during the skip operation, the unit enters pause mode at the beginning of the designated tune.

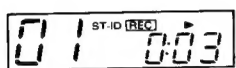
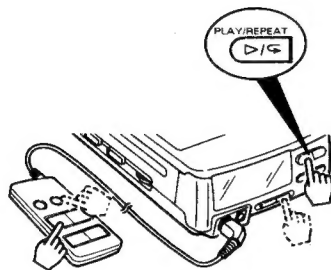
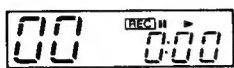
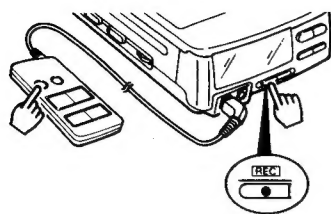
The unit skips to a designated tune by searching for the tune's ST-ID recorded in the subcode area. If the ST-ID is not recorded on the tape, therefore, skipping cannot be carried out.

If pressed again while the "▶" indicator is blinking, the unit skips to a tune located even further in the skip direction.



## Digital recording

First load a tape into the unit (see page 14).  
Operation is possible with either the main unit or the remote controller.

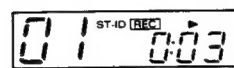
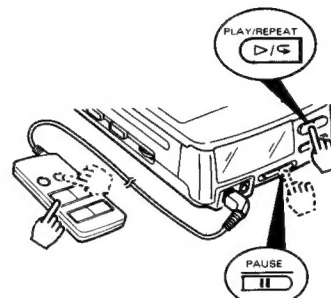
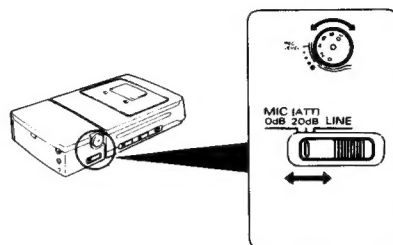
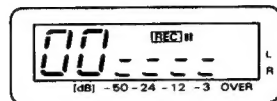
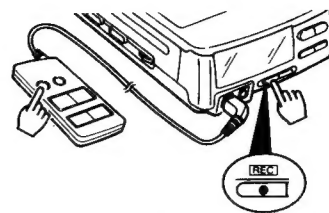


### Connect the unit (See page 11.)

- Press the [REC] button.  
When starting recording from the beginning of the tape, the unit automatically creates a 5-second blank section and then enters record-standby mode.
- Press the [PLAY/REPEAT] button to start recording.  
You can also start recording by pressing the [PAUSE] button.
- To stop recording, refer to page 20.
- Changing the [VOLUME] level during recording has no effect on the recorded sound.
- If five seconds elapse after the [REC] button is pressed, the rotating head moves away from the tape to protect the tape. (The REC indicator blinks.)
- A ST-ID is automatically recorded at the start of each tune. (See page 23.)
- When carrying out digital recording from another DAT deck using a tape recorded with ST-IDs and SKIP-IDs, the same sub-codes are recorded on the new tape.

## Analog recording

Use the separately sold A/D converter (BP-A7).  
First load a tape into the unit (see page 14).  
Operation is possible with either the main unit or the remote controller.



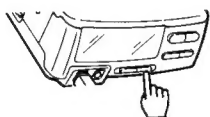
### Connect the unit. (See page 13)

Set the [MIC/LINE IN] switch to "LINE" when recording from a LINE input or to "MIC" when recording from a microphone.

- Press the [REC] button.  
When starting recording from the beginning of the tape, the unit automatically creates a 5-second blank section and then enters record-standby mode.
- Adjust the recording level using the A/D converter unit.  
If the microphone volume is too high, set the "MIC (ATT)" switch to "20 dB".
- Press the [PLAY/REPEAT] button to start recording.  
You can also start recording by pressing the [PAUSE] button.
- To stop recording, refer to page 20.
- During record-standby mode, the recording level is displayed.  
Set the level so that it does not enter the "OVER" area even when the sound is the loudest.
- When you want to check the recording level, press the [PLAY/REPEAT] button. Press the button again to return to the elapsed time display.
- If the recording level enters the "OVER" area during recording, the time display changes to the recording level display for about one second. If this occurs, lower the recording level slightly.

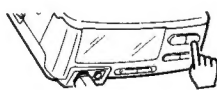
## Stopping/pausing recording

- Operation is possible with either the main unit or the remote controller.



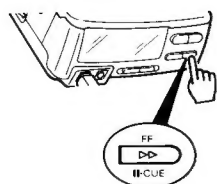
### To pause recording

- Press the [PAUSE] button.  
If five minutes elapse in pause mode, the rotating head moves away from the tape to protect the tape. (The REC indicator blinks.)



### To stop without recording an END-ID (See page 26)

- Press the [STOP/EJECT] button or press the remote controller's [STOP] button.



### To stop after recording an END-ID (See page 26)

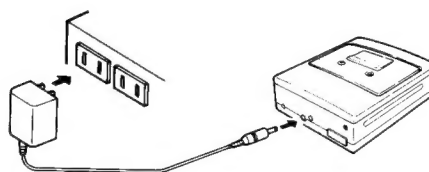
- During recording, press the [FF/CUE] button for at least two seconds. (After the END-ID is recorded for nine seconds, the unit enters stop mode.)

### Erasing a recording

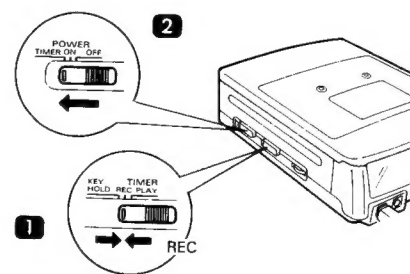
- To erase a tape, set the unit to record mode with nothing connected to the [DIGITAL I/O] jack.
- Do not attach the separately sold A/D converter unit.

## Timer recording/Timer playback

- If the timer power turns off while the tape is still running, the tape or rotating head may be damaged.  
Set the time period on the timer at least 5 minutes longer than the playback time of the tape.

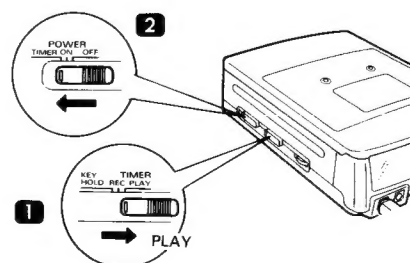


- Before connecting the timer, insert a tape into the unit.
- When carrying out timer recording, make sure the accidental erasure protection "slide door" of cassette tape (page 4) is closed to the right side.



### Timer recording

- Set the [KEY HOLD/TIMER] switch to "REC", then 2 set the [POWER] switch to "TIMER".



### Timer playback

- Set the [KEY HOLD/TIMER] switch to "PLAY", then 2 set the [POWER] switch to "TIMER".

- When using a timer, make sure the unit is in a location where condensation is unlikely to occur. If condensation forms inside the unit, recording or playback will not start when the set time arrives.
- When carrying out analog recording (page 19), adjust the recording level before connecting the timer.
- When not using a timer, do not set the [POWER] switch to "TIMER", as this will cause recording or playback to start automatically when the AC adaptor is connected.

## SCMS

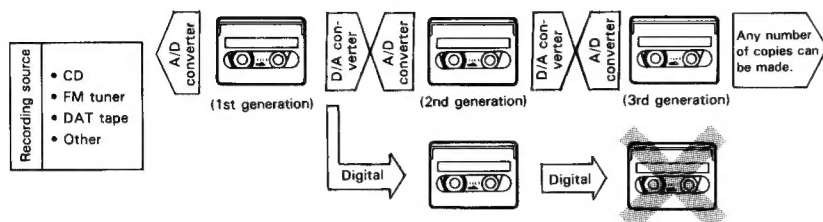
### SCMS (Serial Copy Management System)

SCMS is a new standard which allows you to make only first generation copies of digital sources (CD, etc.) which contain a copy prohibition code.

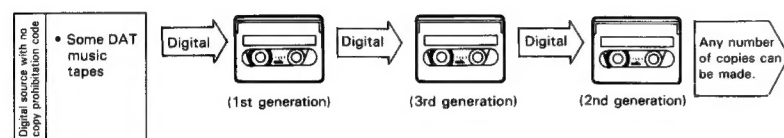
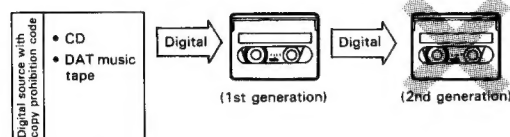
#### Copy prohibition code

Sources which contain a copy prohibition code include the following: CDs and some commercially available DAT music tapes.

#### When carrying out analog recording



#### When carrying out digital recording



- There are some cases where the above rules do not apply, such as with DAT music tapes which do not follow the SCMS standard.

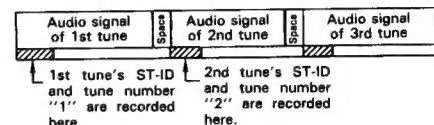
## Subcodes

With DAT tapes, in addition to the recorded music signal, various subcodes are recorded on the tape to aid in music selection and editing. With commercially available DAT music tapes, subcodes are prerecorded on the tapes. With blank tapes that you record yourself, subcodes are automatically recorded during recording and can also be recorded manually during editing.

### ST-ID (Start ID)

This signal is recorded at the beginning of each tune. By searching for this signal, the unit can locate the beginning of a designated tune. Also, the tune number for each tune is written on the tape at the same position as the ST-ID. Therefore, if the ST-ID is not written at the proper position, the tune number will not be displayed correctly.

- The ST-ID is automatically written on the tape during recording in the following cases:
  - When sound is detected again after a blank section of 2 seconds or longer occurs during recording.
  - When recording starts and sound is detected after recording was stopped or paused.
- Depending on the contents of the source being recorded, ST-IDs may not be written correctly on the tape (in cases such as when there is excessive noise between tunes, when the interval between tunes is short, when the sound stops and then starts again in the middle of a tune, or when a tune contains a section of extremely low level sound). In such cases, you will need to edit the subcodes later. (See page 24.)

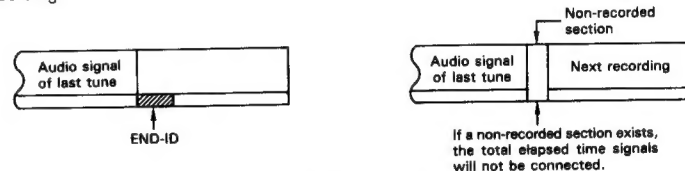


- A ST-ID cannot be written within 9 seconds after the previous ST-ID.

### END-ID

This signal is recorded to indicate the end of the recorded contents. The unit stops automatically when this signal is detected during playback or fast-forwarding. This signal is also handy for quickly locating the end of a recording when continuing a recording from the end of the previously recorded contents.

- If recording is continued from the end of a previous recording that has no END-ID, the total elapsed time may not continue into the newly recorded section. In such a case, the total elapsed time for the newly recorded section will not be displayed and the tune search function may not operate correctly. Always write an END-ID at the end of a recording.

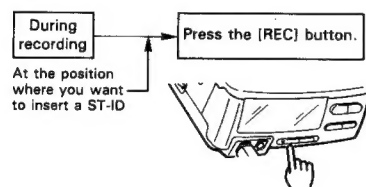


- Make sure there is at least 9 seconds between the last ST-ID and the END-ID.

## Subcode editing

### To manually write a ST-ID during recording

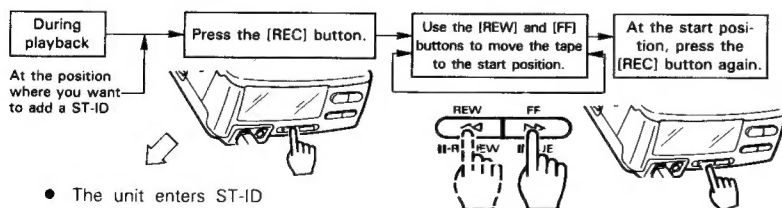
- In situations such as when recording an audio source that has no space between tunes, you can manually write ST-IDs in the appropriate locations while recording is being carried out.



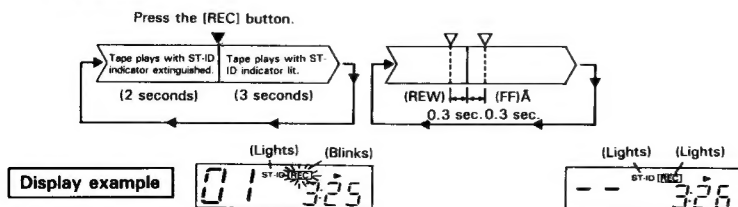
- After writing a ST-ID, you must wait at least 9 seconds before writing the next ST-ID.
- You cannot write more than 99 tune numbers.
- If no tune number is displayed, writing a ST-ID will not switch to the next tune number. Renumber the tunes after recording is finished. (See page 25.)

### To add a ST-ID to a previously recorded tape

- If the displayed tune number does not change when tunes change during playback, no ST-ID is recorded at that location. In such a case, use the following procedure to add the necessary ST-ID.



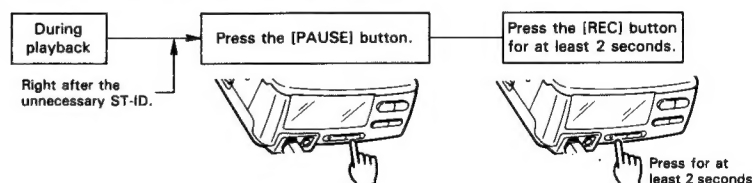
- The unit enters ST-ID record-standby mode and the following operation occurs.
- After three seconds of playback, the tape automatically rewinds to a position two seconds before the start position. (This is repeated up to 10 times.)
- Each time one of these buttons is pressed, the position where the ST-ID indicator lights is moved forward or backward by 0.3 second. (1.8 seconds max.)
- The ST-ID is written on the tape and then playback continues.



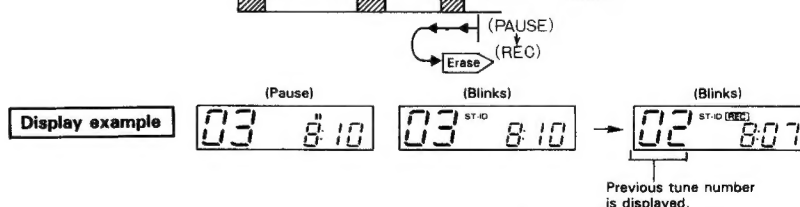
- Leave at least 9 seconds between ST-IDs.
- Tune numbers do not change automatically when a ST-ID is added. After adding all necessary ST-IDs, renumber the tunes. (See page 25.)

### To erase an unnecessary ST-ID from a recorded tape

- If the tune number changes at a place other than between two tunes, an unnecessary ST-ID is written on the tape. Erase the ST-ID using the following procedure.

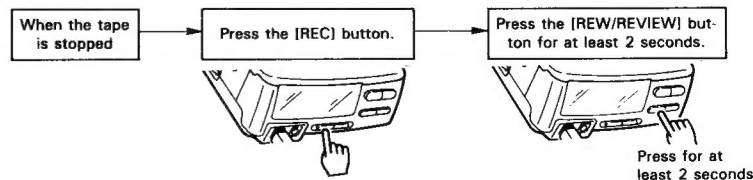


- The unit enters pause mode after the unnecessary ST-ID.
- The tape automatically rewinds to the beginning of the unnecessary ST-ID.
- The ST-ID is erased and then playback continues.

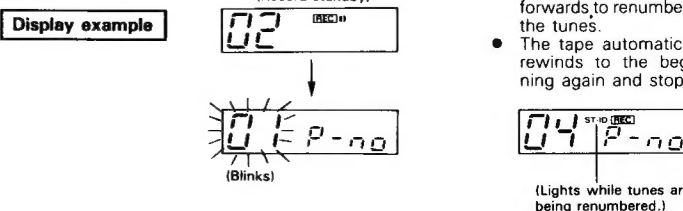


### Renumbering tunes

- After adding or deleting one or more ST-IDs, you should renumber the tunes so that the tune numbers run consecutively from the first to the last tune starting with "1".

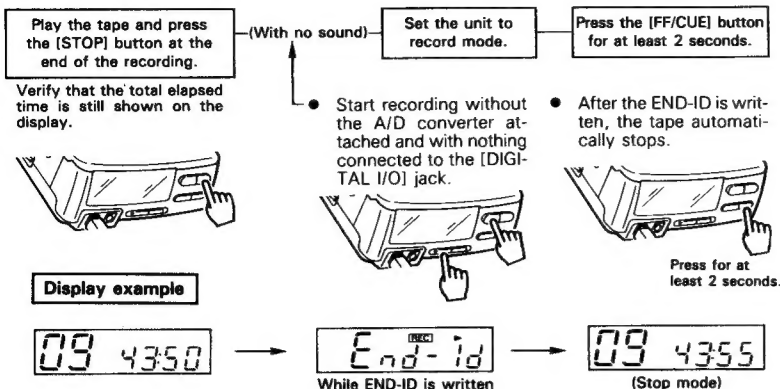


- The unit enters record-standby mode.
- The tape automatically rewinds to the beginning and then fast-forwards to renumber all the tunes.
- The tape automatically rewinds to the beginning again and stops.



■ To write an END-ID on a recorded tape

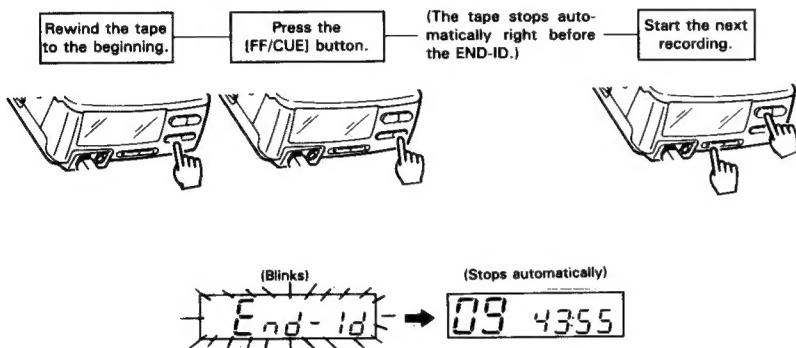
- If a tape was stopped at the end of a recording without writing an END-ID, you can use the following procedure to write the necessary END-ID.



- Leave at least 9 seconds between the last ST-ID and the END-ID.

■ To continue recording from the END-ID position

- When you want to continue recording on a tape which contains an END-ID, you can use the following procedure to continue the recording without interruption.



- If the next recording is started using this procedure, the END-ID is erased automatically. Tune numbers are automatically continued in sequence, and the total elapsed time is automatically continued from the previous recording.

Cleaning

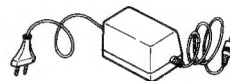
- **Cleaning the cabinet**  
Clean the cabinet by wiping with a dry cloth. If an area is particularly dirty and cannot be cleaned well with a dry cloth, wipe the area with a cloth dampened with water, then wipe dry with a dry cloth. (Do not use benzene, thinner, or other chemicals.) Always keep terminals and plugs clean.
- **Cleaning the head**  
If the head becomes dirty or covered with dust, sound dropouts or noise may occur. Also, if the head becomes clogged during playback, "Error" will appear on the display and the sound will stop. In such cases, clean the head with a commercially available DAT-use head cleaning tape. Do not inject oil into the unit. This will damage the unit. If the head becomes worn after long use, it must be replaced. Contact your dealer for the replacement (fee required). "Error" may appear on the display if a wrinkled or damaged tape is used or if the head becomes clogged. If this occurs, replace the tape or try cleaning the head with a cleaning tape. If this unit is subjected to a strong external disturbance (such as a shock or abnormal voltage) or misoperation, the unit may stop responding to button operations or operate abnormally. In such a case, disconnect the AC adaptor plug, wait about 30 seconds, reconnect the plug, then retry the operation.

■ Accessories

- (1) Remote controller



- (2) AC adaptor



- (3) Digital connection Cord



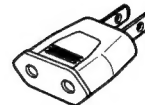
- (4) Analog connection cord



- (5) Digital-use adaptor plug

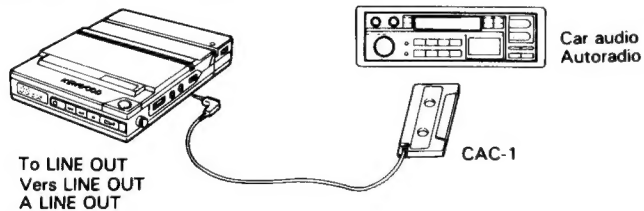


- (6) Plug adaptor (Except for USA, Canada and UK)



Operations

- Lower the volume of both the CD player and the car stereo to avoid sudden excessively large sound output.
- Connections:**  
Insert the plug of the cord extending from the CAC-1 into the CD player.



- The **CAC-1** inserting direction differs for each type of car stereo used, and depends on the cassette insertion slot of the cassette deck section. Refer to the following chart for loading instructions.

	Auto-reverse cassette deck			Normal (one-direction)
Cassette insertion slot (Car stereo)				
CAC-1				
	Tape side to be played			Load with side A facing up
	For playback of upper side	For playback of lower side	For playback of upper side	
Notes	In this case, first replace the attached hooking prevention lug with the one provided.			
				If sound is not heard, or is very low, reverse the tape running direction to the opposite side.

- After placing the CAC-1 into the car stereo cassette insertion slot, raise the volume level of the car stereo to the normal listening position. Then adjust the volume of the CD player. (After this, use the car stereo control to adjust the volume level.)
- To remove the CAC-1 from the car stereo, press the EJECT button in the same way as for cassette tapes.

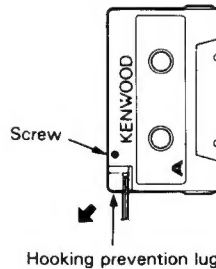
Unusable Car Stereo Types

- The CAC-1 cannot be used with the following types of car stereos.
- One-direction cassette receivers in which the head is located on the left side.
  - Cassette receivers which function by detecting the tape tension. (In this case, when loading the CAC-1, it will be ejected.)
  - Car stereo models where the CAC-1 signal cord interfere with the insertion and removal of the CAC-1.

Replacement of Hooking Prevention Lug

To replace the attached hooking prevention lug, connected to the signal cord outlet of the CAC-1, with the one supplied, perform the following.

- Loosen the screw located close to the cord outlet.
- Remove the lug by pulling it in the direction of the arrow, as shown in the figure.
- Insert the supplied lug by pushing it in the direction opposite to the arrow. (At this time, the lug is on side A.)
- Tighten the screw.



The **CAC-1** is a Car Audio Cassette Adaptor which permits a portable CD player to be used in a car in combination with cassette car stereo equipment.

The **CAC-1** employs an electromagnetically coupled head, which does not directly contact the car stereo head, for higher fidelity sound.

Specifications

Frequency response	50 - 20,000 Hz (depending on the car stereo used)
Dimensions	102.4 × 12.1 × 63.8 mm
Weight	45 g
Cord length	1.5 m
Accessories	Hooking prevention lug × 1



## CLEANING THE DAT DRAM HEAD

### Procedure

1. Put on thin gloves so as to prevent direct contact to the upper and lower drums with your naked hand.
2. Soak the Chamois leather with a few drops of head cleaner liquid, gently attach it to the upper drum and head tip, and rotate the upper drum counterclockwise.
3. Clean the herical lead of lower drum with swarb. (See Fig. 20-1.)

### Caution

1. Although the DAT head is made of extremely hard material, in no case attempt to wipe it in the vertical direction since it has a very thin structure.
2. Before use the cleaned parts must dry thoroughly.
3. Never use the contaminated Chamois leather.
4. When cleaning, be careful so as not to damage the pinch roller, guide, inclined post, and capstan shaft.
5. In no case attempt to clean the drum with alcohol (otherwise the adhesives in the drum may be dissolved, causing trouble of drum).

## CLEANING THE DAT GUIDE POST AND ROLLER

### Procedure

- Clean the capstan shaft, cassette post entrance and exit, inclined post entrance and exit, tension lever post, capstan belt, pinch roller, tape guide, tape guide post, entrance post and exit post with head cleaner.

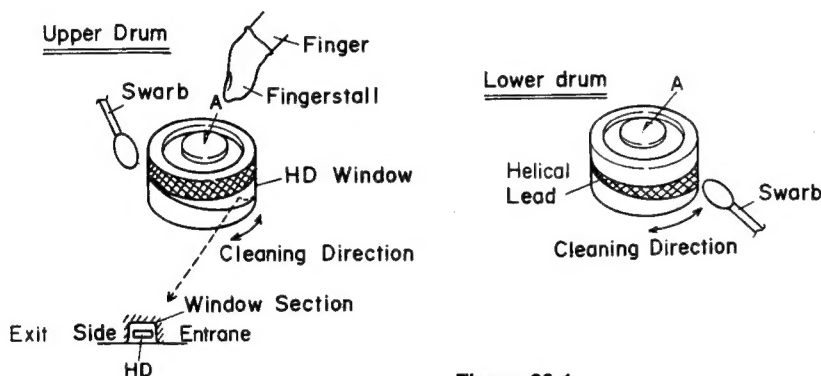


Figure 20-1

- Parts to be cleaned
- ① Capstan Shaft
  - ② Cassette Post Entrance and Exit
  - ③ Inclined Post Entrance and Exit
  - ④ Guide Roller Entrance and Exit
  - ⑤ Tension Lever Post
  - ⑥ CAP Belt
  - ⑦ Pinch Roller
  - ⑧ Tape Guide
  - ⑨ Tape Guide Post
  - ⑩ Entrance Post
  - ⑪ Exit Post

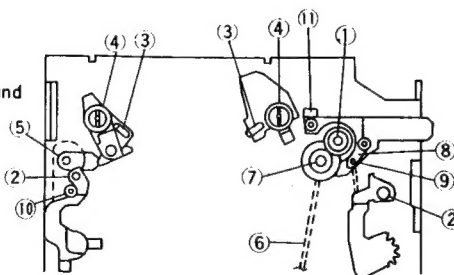


Figure 20-2

**Figure 17 BLOCK DIAGRAM (MAIN UNIT)**





## CARES WHEN HANDLING THE SET

### [Dewing]

In the winter the window glass of warm room may be covered with dew. Dew may appear on the inner drum and head of digital audio tape recorder in the following cases. This phenomenon is called the dewing.

- Just after the stove is lighted.
- When the tape recorder is laid in steamy or moist room.
- When the tape recorder was carried from cool outside (or room) into warm room.

When the dewing occurs, all the liquid crystal indicators blink and do not operate normally. In this case take out the tape, and keep the power turned on. Dew disappears, and the blinking of indicators stop. However, it is recommended to wait for 1 to 2 hours before use.

## CARES WHEN HANDLING THE DAT DRUM ASS'Y

### Handling

- 1) Prevent from drop and shock
- 2) Do not touch the drum surface with hand.
- 3) Do not lay in the dusty place.
- 4) Do not hold at high temperature or humidity.
- 5) Do not disassemble.

### Cleaning of DAT drum motor assembly

If the DAT drum motor complete assembly is contaminated, playback capacity is impaired. When cleaning, refer to the description of cleaning method.

## CARES WHEN HANDLING THE CASSETTE TAPE FOR DAT

- Since the DAT tape is used to record and playback extremely high density data, it must be kept clean. Therefore the close structure is adopted. In no case attempt to open or close the slider at the bottom of cassette and front lid or to touch the tape in cassette with finger. (Fig. 21-1). If tape contaminated by fingerprint or oil is used, the tape travel friction on the drum increases, resulting in undue winding of tape around the drum. In this case clean the head.
- Do not use the damaged or folded tape since it causes clogging of head or drum.
- Cassette tape loading: The cassette must be inserted in specific direction. In case of misinsertion never unduly force in or take out.

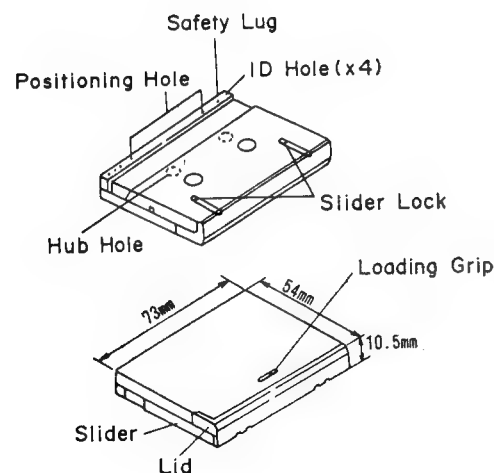


Figure 21-1

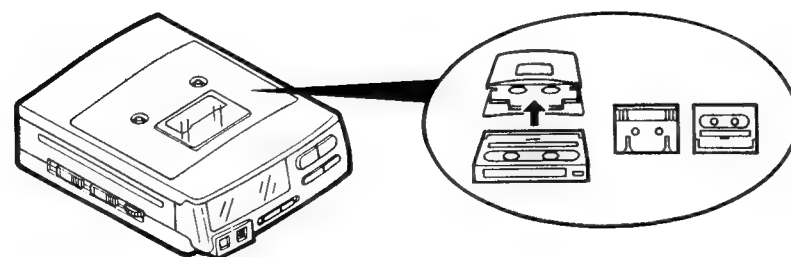


Figure 21-2

## DISASSEMBLY FOR REPAIR

### Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep its safety and excellent performance:

1. Take out the DAT cassette from the unit.
2. Be sure to remove the AC adaptor from the unit starting to disassemble the unit.
3. After servicing the unit, be sure to rearrange the leads where they were before disassembling. If the screw is set in improper position, the unit may fail to operate normally.
4. Take sufficient care on static electricity of integrated circuits and other circuits when servicing.

### TAKING OUT THE CASSETTE IN CASE OF TROUBLE

Remove the bottom, top and main cabinets, following the disassembling method, pull the fitting with the slotted screwdriver as shown in Fig. 22-3, open the cassette lid, and take out the cassette tape.

### Main Unit

STEP	REMOVAL	PROCEDURE	FIGURE
1	Bottom cabinet	1. Screw ..... (A1) x 5	22-1
2	Top cabinet and Main cabinet	1. Screw ..... (B1) x 5	22-2
3	Front panel	1. Screw ..... (C1) x 4	22-2
4	Cassette lid and Guide plate A/B(*1)	1. Screw ..... (D1) x 2 2. Screw ..... (D2) x 4	23-1
5	Main PWB	1. Screw ..... (E1) x 4 2. Remove the flexible PWB. .... (E2) x 8	23-2
6	Display PWB and PWB holder	1. Screw ..... (F1) x 2 2. Screw ..... (F2) x 2	23-2

\*1 To remove the guide plate A, B, remove the guides R and L, shift the guide plate in the direction A, and remove the guide plate.

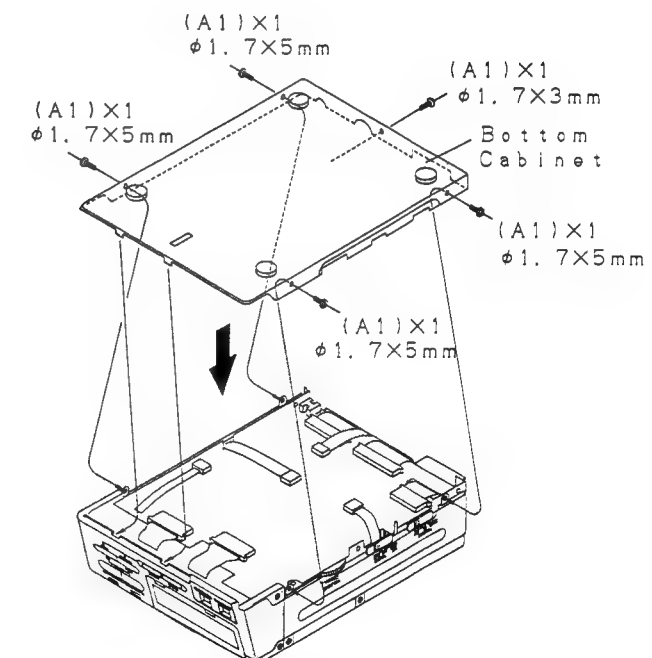


Figure 22-1

# DISASSEMBLY FOR REPAIR

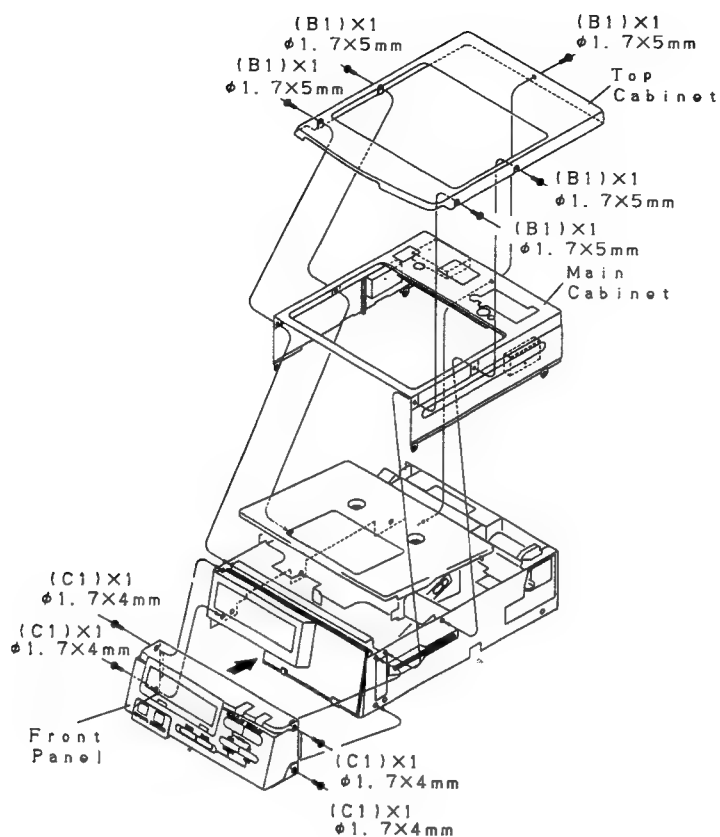


Figure 22-2

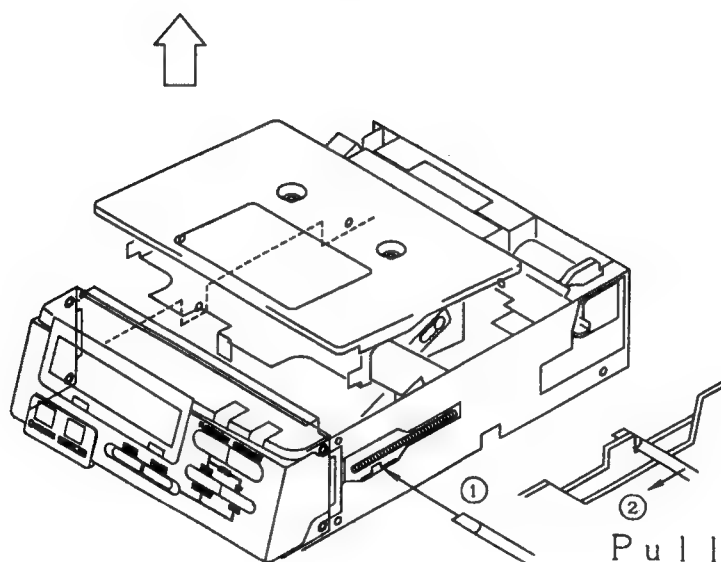


Figure 22-3

DISASSEMBLY FOR REPAIR

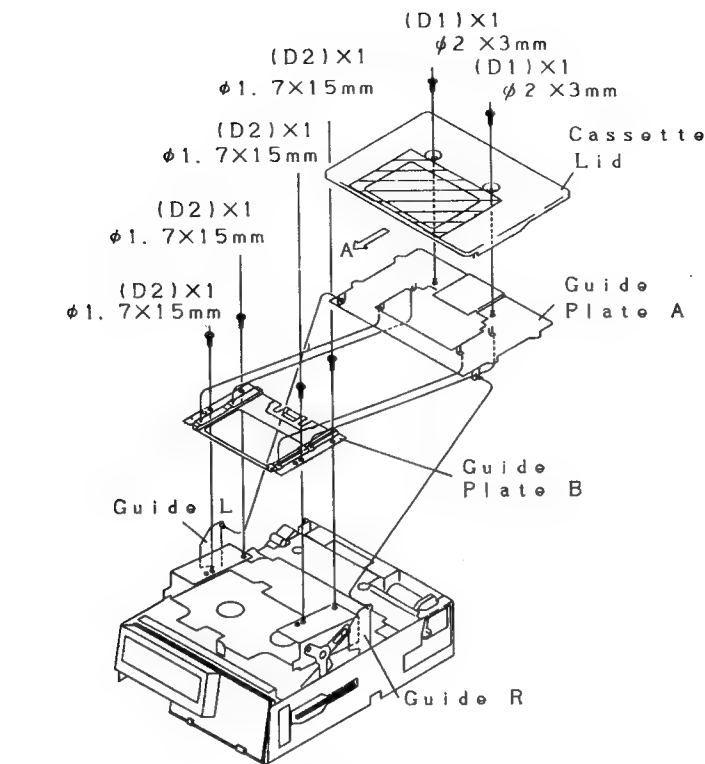


Figure 23-1

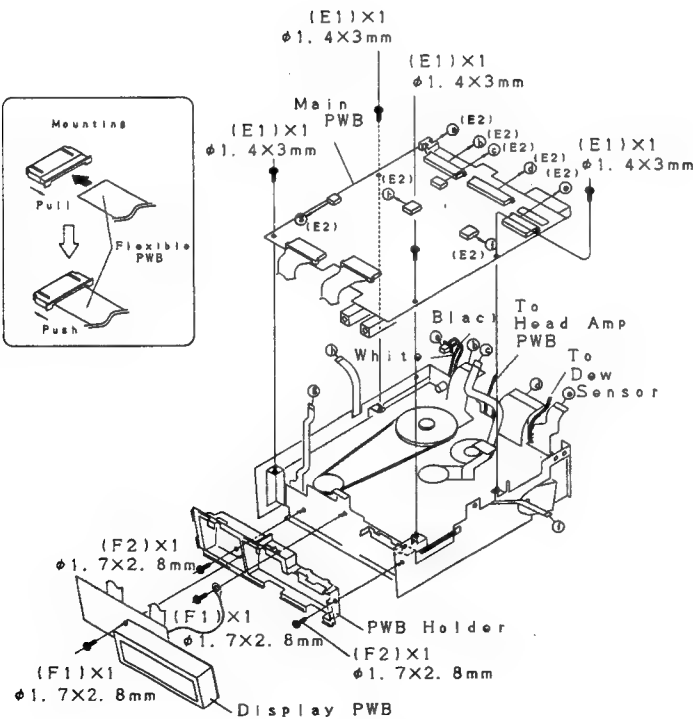


Figure 23-2

DISASSEMBLY FOR REPAIR

DAT MECHANISM SECTION

The DAT mechanism consists of DAT loading mechanism and DAT mechanism.

REMOVING AND REINSTALLING THE DAT LOADING (CASSETTE COMPARTMENT) MECHANISM (Fig. 26-1)

Removing

(Disassembling, following the steps 1 to 6 of disassembling method to leave only the mechanism)

1. Remove the front fitting set screw (A1), 3 pcs., to remove the front fitting.
2. Remove the cassette compartment set screw (A2), 4 pcs.
3. Shift the cassette compartment backward, lift it straightly to remove it from the DAT mechanism body.

Caution:

When removing the cassette compartment, be careful so that the cassette compartment parts do not contact the drum unit or DAT mechanism main body parts.

Reinstalling

Caution:

When mounting the cassette compartment, take care so that it does not contact the drum unit and DAT mechanism main body parts.

1. Fix with the cassette compartment mount screw (A2), 4 pcs.

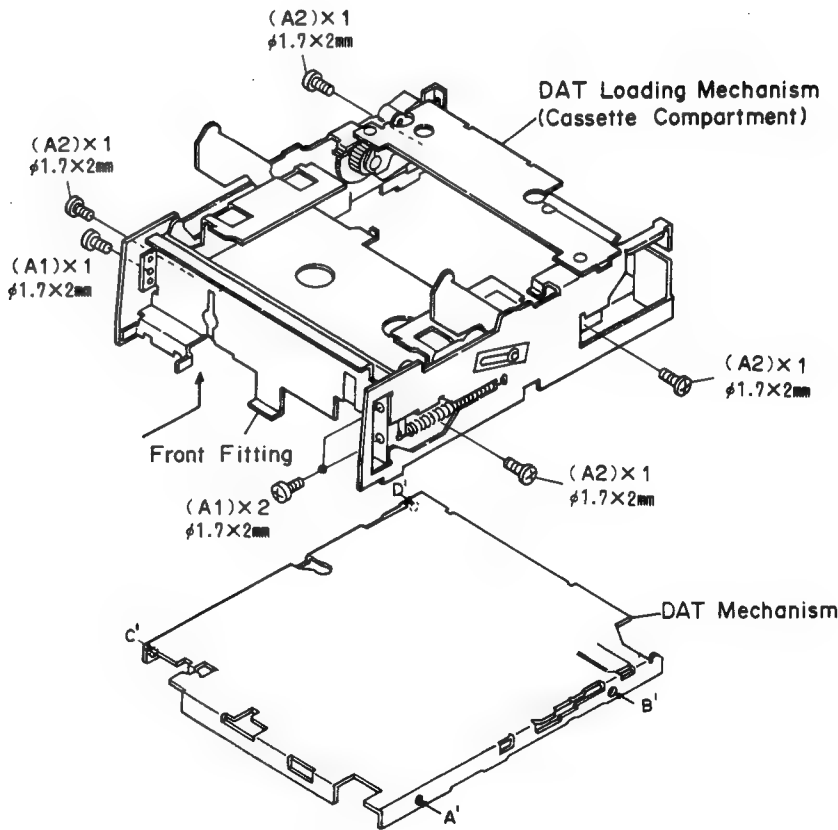


Figure 26-1

## DISASSEMBLY FOR REPAIR

## REMOVING AND REINSTALLING THE DRUM MOTOR ASSEMBLY (Fig. 27-1)

## Removing

(Disassemble, following the steps 1 to 6 of disassembling method, and remove the DAT loading mechanism, referring to page 23)

1. Remove the drum flexible connector.
2. Remove the drum motor assembly set screw (B1), 4 pcs.

## Notes:

- 1) Be careful so as not to damage the rotating drum with screwdriver or drum motor assembly set screw.
- 2) Be careful so that the dew sensor does not contact the rotating drum.

3. Put on the white gloves, and remove the drum motor assembly straightly upward.

**Note:** Hold not the rotating drum but the both ends of resin base.

## Reinstalling

1. Clean the drum motor assembly mounting surface (4 places) and main chassis mounting surface (4 tapped places) with alcohol.

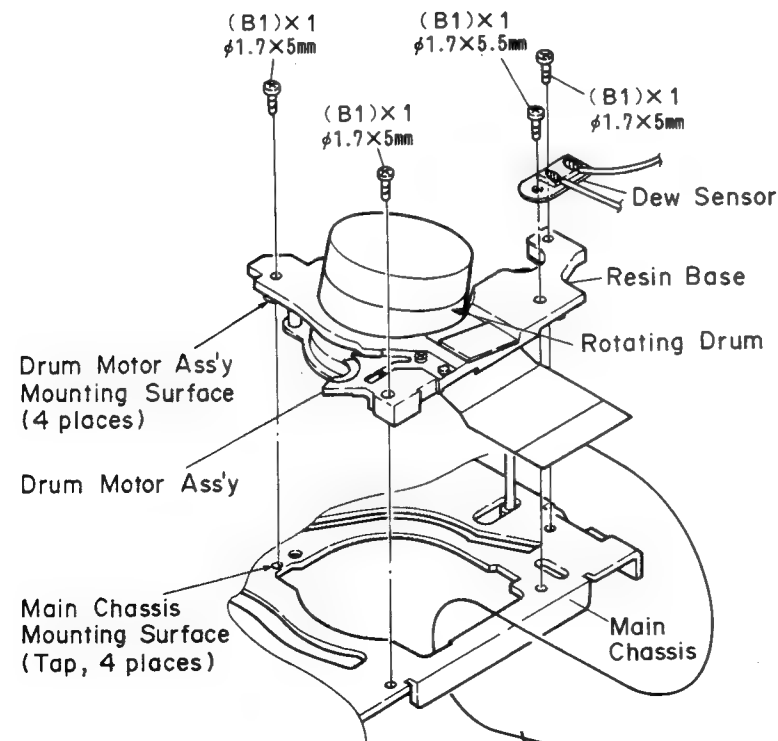


Figure 27-1

2. Put on the white gloves, and insert the drum motor assembly positioning pin (2 pcs.) into the main chassis positioning hole.

## Notes:

- 1) Hold not the rotating drum but the both ends of resin base.
- 2) Ascertain that the drum motor assembly mounting surface (4 places) is laid tightly on the main chassis mounting surface (4 places).

3. Fix the set screw, (B1), 4 pcs., with torque screwdriver (tightening torque 1 +0, -0.2 kg.cm). However, one of them must be used to secure the dew sensor together.

## Notes:

- 1) Be careful so as not to damage the rotating drum with the torque screwdriver, set screw or dew prevention sensor.
- 2) When mounting the dew sensor, be careful so that the sensor surface is not contaminated by fingerprint or other contaminant.
4. Lock the drum motor assembly set screw (B1), 4 pcs.
5. Connect the drum flexible connector.

## DISASSEMBLY FOR REPAIR

## REPLACING THE CAPSTAN MOTOR ASSEMBLY AND CAPSTAN BELT (Fig. 28-1, 28-2, 29-1)

## Removing

(Disassemble, following the steps 1 to 6 of disassembling method, and remove the DAT loading mechanism, referring to page 23)

1. Disassemble, following the DAT loading mechanism removing method, to leave only the mechanism. (Refer to page 23.)
2. Remove the loading motor assembly set screw (E1), 2 pcs. (Fig. 28-1)
3. Remove the loading motor assembly from the tape guide base assembly. (Fig. 28-1)
4. Remove the loading belt (E2) from the motor pulley. (Fig. 29-1)

**Note:** When removing the loading motor assembly without removing the drum motor assembly, take utmost care so that the loading motor terminal and motor lead wire do not contact the rotating drum.

5. Remove the tape guide base assembly set screw (C1), 1 pc., and remove the tape guide base assembly. (Fig. 28-1)
6. Remove the capstan belt (C2). (Fig. 29-1)
7. Remove the capstan motor assembly set screw (C3), 2 pcs., from the front side of main chassis, and remove the capstan motor assembly set screw, (C3), 3 pcs., from the rear side. (Fig. 28-2)
8. Withdraw straightly the capstan motor assembly in the direction shown by the arrow.

## Reinstalling

1. Clean the capstan motor assembly and main chassis mounting surfaces with alcohol.
2. Insert the capstan motor assembly into the specific hole from the rear side of main chassis.
3. Hold the pulley of capstan motor assembling with fingers, and fix the capstan motor assembly set screw (C3), 5 pcs., with torque screwdriver (tightening torque 1.2 +0, -0.2 kg.cm).
4. Clean the capstan belt, motor pulley and reel pulley V-grooves, and put on belt.

**Note:** Check for kink of capstan belt.

5. Mount the tape guide base assembly, and fix it with tape guide base assembly set screw (C1).
6. Put the loading belt (E2) on the motor pulley.

**Note:** Check for kink of loading belt.

7. Fit the loading motor assembly in the specified position on the tape guide base assembly.

8. Fix the loading motor assembly set screw (E1), 2 pcs.

**Note:** When mounting the loading motor assembly without removing the drum motor assembly, take utmost care so that the loading motor terminal and motor lead wire do not contact the drum motor assembly.

9. Lock the set screw (E1), 2 pcs. (Between screw head and outlet link spring)

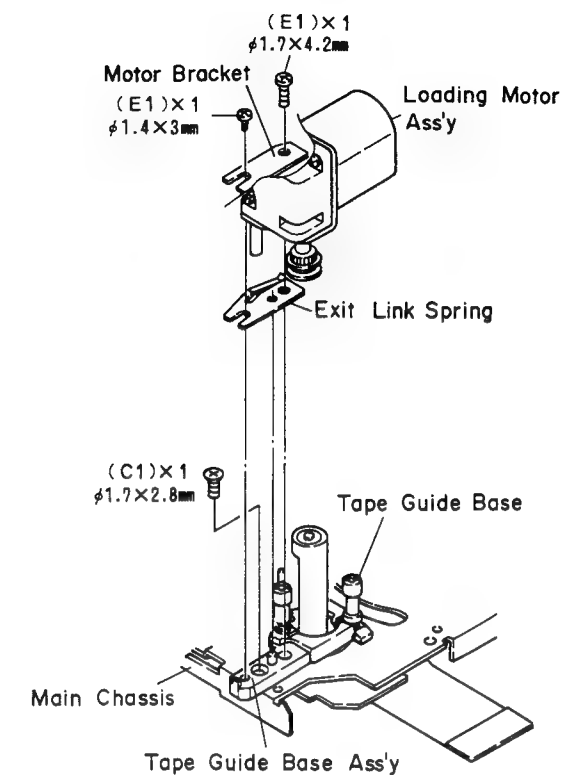


Figure 28-1

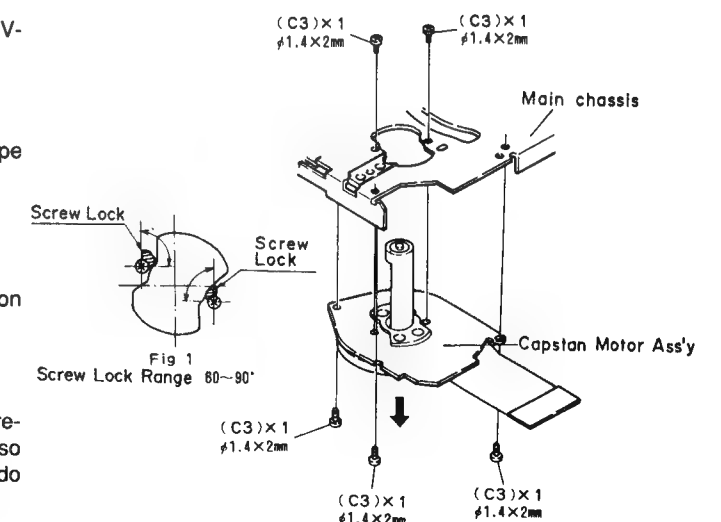


Figure 28-2

## DISASSEMBLY FOR REPAIR

REPLACING THE LOADING MOTOR ASSEMBLY  
AND LOADING BELT (Fig. 29-1, 2)

**Removing**  
(Disassemble, following the steps 1 to 6 of disassembling method, and remove the DAT loading mechanism, referring to page 23)

Remove the loading motor assembly and loading belt, referring to the replacing method for capstan motor assembly and capstan belt.

**Reinstalling**

Mount the loading motor assembly and loading belt, referring to the replacement method for capstan motor assembly and capstan belt.

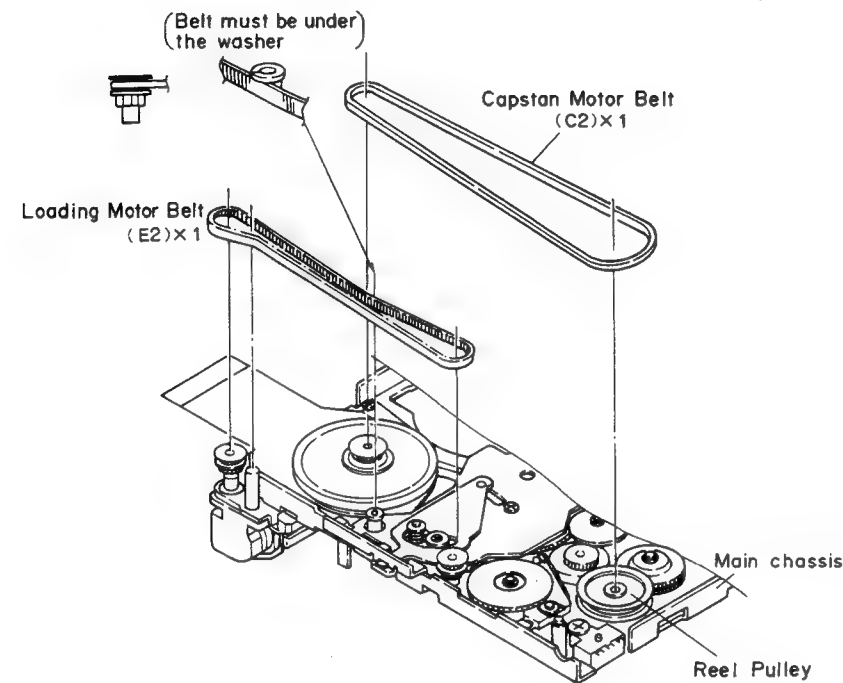


Figure 29-1

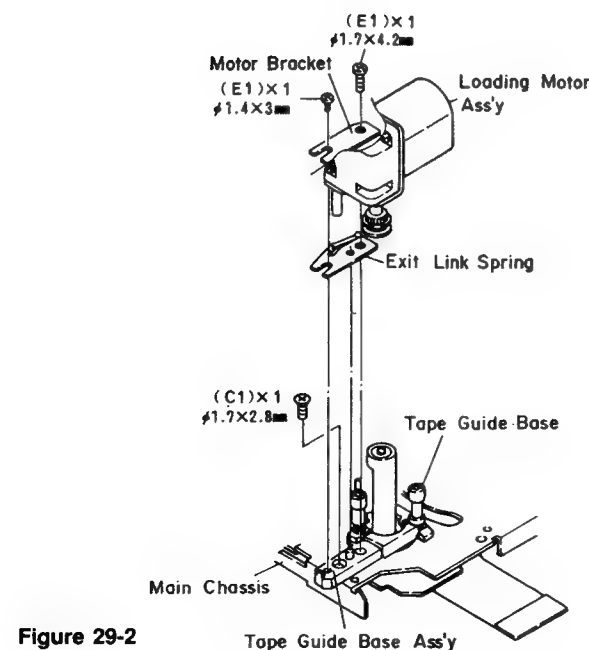


Figure 29-2

Tape Guide Base Ass'y

## DISASSEMBLY FOR REPAIR

REMOVING AND REINSTALLING THE ROTARY  
SWITCH (Fig. 30-1)**Removing**

(Disassemble, following the steps 1 to 6 of disassembling method, and remove the DAT loading mechanism, referring to page 23)

Turn over the main chassis, and remove the rotary switch set screw (D1), 2 pcs., with precision watch screwdriver.

**Reinstalling**

1. Match the triangular mark stamped on the rotary switch gear with the triangle mark on the switch main body.
2. Set the rotary switch in the specific position, match the triangle mark of gear, and fit in.
3. Tighten the rotary switch set screw (D1), 2 pcs., with torque screwdriver. (Tightening torque 0.4 kg.cm)

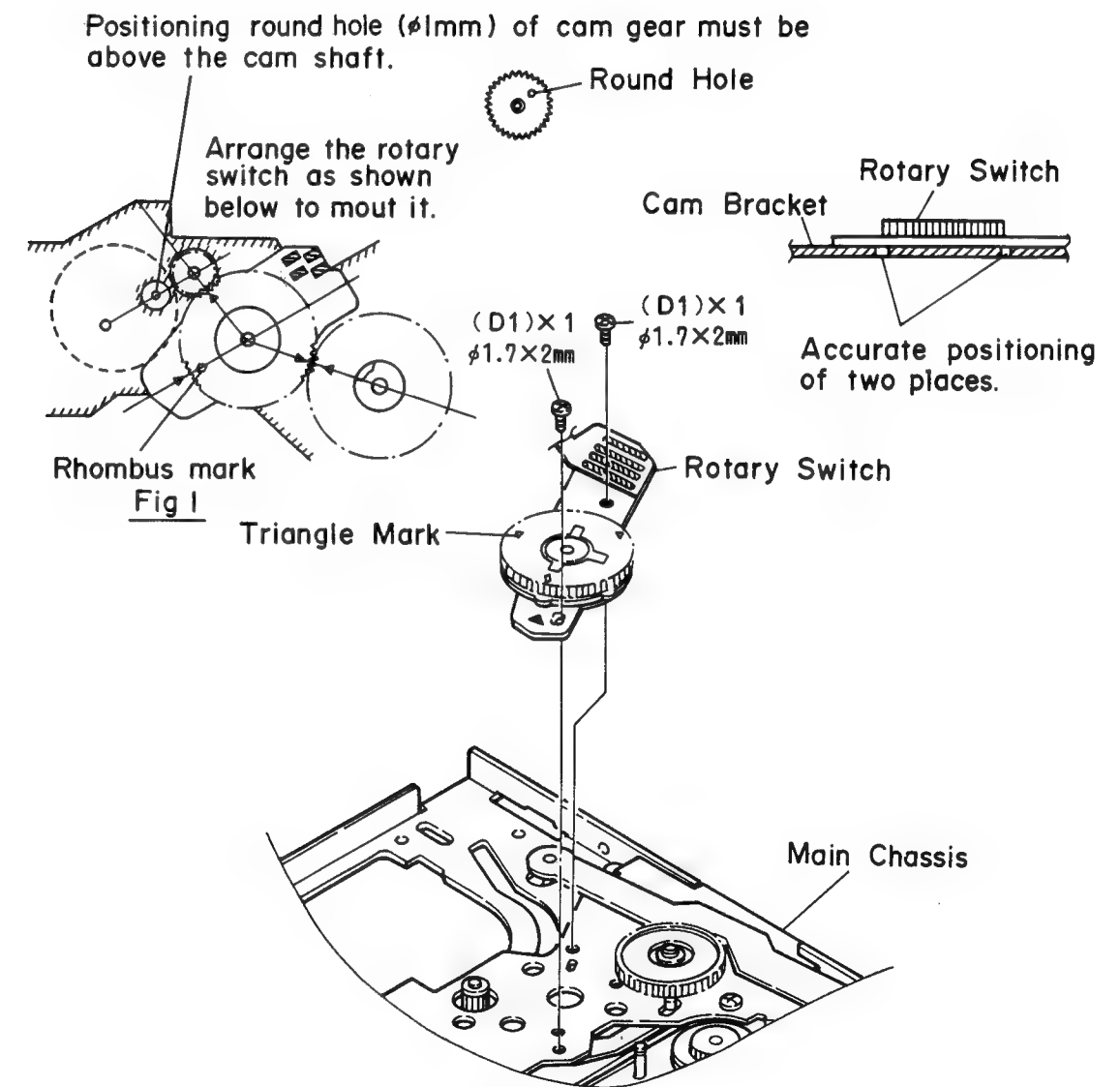


Figure 30-1

## DISASSEMBLY FOR REPAIR

## REMOVING AND REINSTALLING THE BAND BRAKE (Fig. 31-1)

## Removing

(Disassemble, following the steps 1 to 6 of disassembling method, and remove the DAT loading mechanism, referring to page 23)

1. Remove the lock washer (F2), 1 pc., which fixes the rotation fulcrum axis of tension drive lever (F1).
2. Remove the band brake assembly set screw (F3), 1 pc., provided at the rear side of main chassis with the aid of precision watch screwdriver.
3. Remove the lock washer (F4), 1 pc., which fixes the cam gear, and remove the cam gear. Then, remove the lock washer (F4), 1 pc., which fixes the gear, and remove the gear.
4. Remove the tension spring (F5), 1 pc., lift straightly the tension drive lever (F1), and remove it from the main chassis.
5. Remove the band brake assembly.

## Mounting

1. Assemble the tension drive lever and the band brake assembly. (Fig. 31-1, part A)

## Notes:

- 1) The band brake assembly must be fitted in the correct direction with respect to the tension drive lever.
  - 2) When the part has been fitted in the main chassis, the felt part of band brake assembly must be in contact with the outer peripheral part of feed reel stand.
2. Insert the rotation fulcrum axis of tension drive lever into the specific axis hole of main chassis.
  3. Temporarily fix the band brake assembly set screw (F3), 1 pc., with precision watch screwdriver.
  4. Turn over the main chassis, and fix the rotation fulcrum axis of tension drive lever with the lock washer (F2), 1 pc.
  5. Engage the tension spring (F5).
  6. Fit the cam gear in the position indicated in the figure, and fix it with the lock washer (F4), 1 pc. Then, fit the gear, and fix it with the washer (F4), 1 pc.
  7. Adjust back tension.

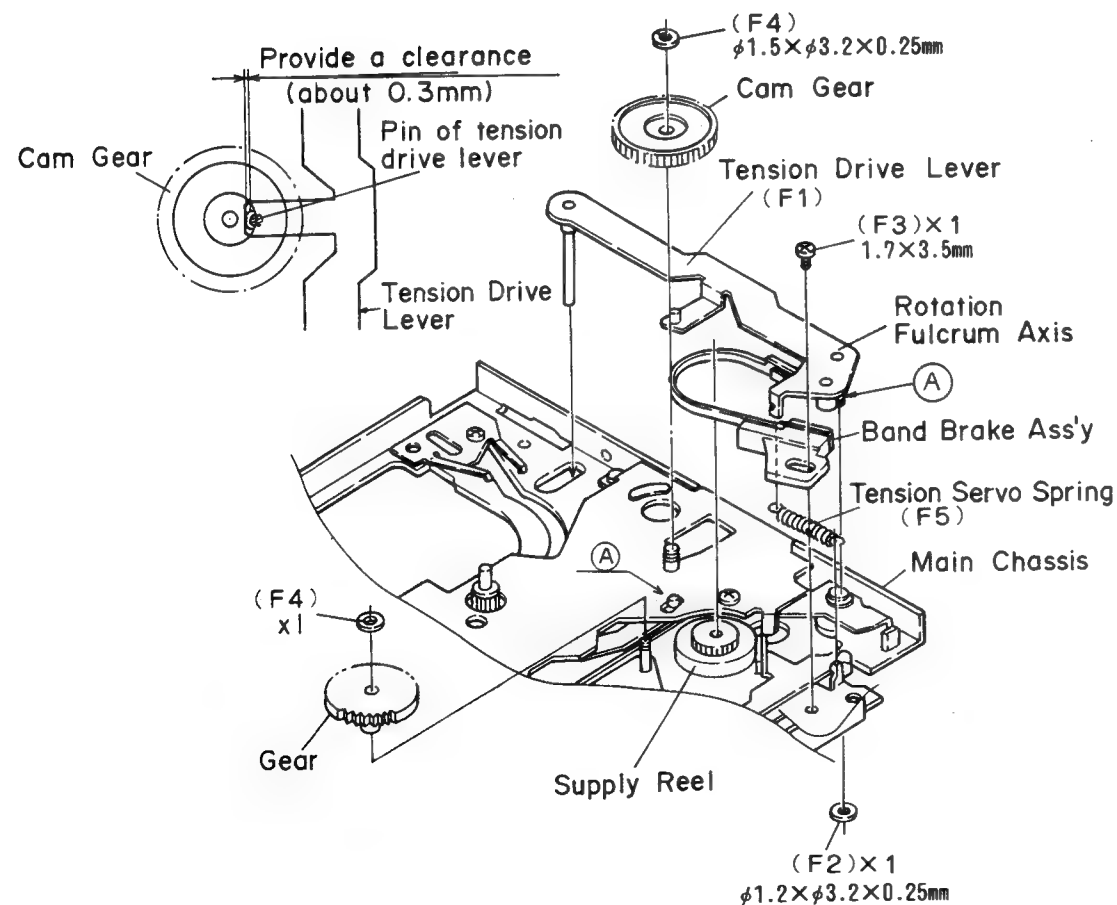


Figure 31-1

## ADJUSTMENT

## ■ Adjustment of DAT mechanism

## Adjusting the mechanism by running it

Disassemble, following the steps 1 to 4, and run the mechanism after removing the cabinet, cassette cover and guide plate A.

## Note:

Do not touch the magnetic part of cassette tape.

## Preparation for adjustment

So as to facilitate height adjustment of guide rollers and post, remove the damper and the damper fitting.

## 1. Checking of guide roller height

Ascertain that tape folding and tape crease do not appear at the end of DAT tape when the DAT tape is set in running state as shown in Fig. 32-1.

If there is no deviation, adjustment is not necessary.

Checking	Adjusting method	Instrument Connection
Height adjustment	Waveform must be as shown in Fig. 32-3.	GND PBSG HSW

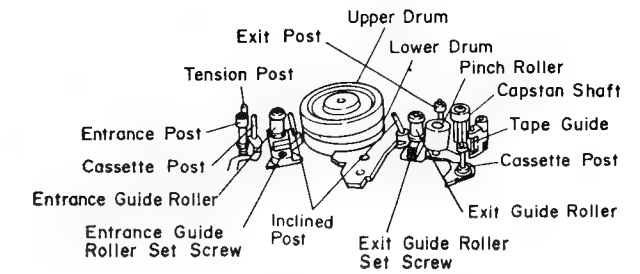
Apply trigger with HSW and check PBSG with oscilloscope.

## 2. Adjustment of guide roller height

Adjustment is required only when the guide roller height is deviated or the guide roller has been replaced. When adjusting, play back the commercially available music tape.

## Adjusting method

1. Loosen the guide roller fixing screw with Phillips head precision screwdriver, and half tighten it so that the guide roller can be rotated normally counterclockwise and moved up and down (Fig. 32-1).
  2. Apply trigger with HSW, and set so that the envelope waveform appears at the center of oscilloscope (at PBSG).
  3. Seeing the envelope waveform, adjust the height of guide roller, and attach the tape to the drum lead. When the tape is above or below the helical lead position, the envelope waveform as shown in page 30 appears.
  4. Seeing the envelope waveform, finely adjust the height of guide roller to get the flat envelop waveform. Finally adjust the height of guide roller in lowering direction.
  5. After completion of adjustment tighten the guide roller fixing screw clockwise with tightening torque 1.5 kg.cm by using the Phillips head torque screw driver.
- Finally, after operation of loading/unloading ascertain that the adjustment is correct in PLAY mode, and lock the guide roller set screw.



When removing the guide roller, be careful so as not to lose the iron ball 0.8mm shown below.



Figure 32-1

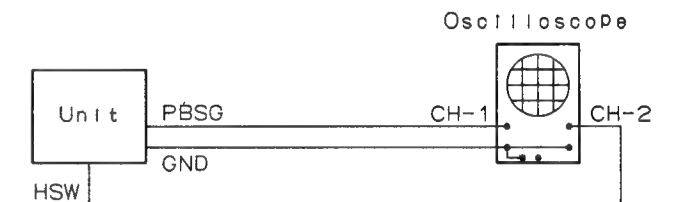


Figure 32-2 ADJUSTMENT OF GUIDE ROLLER HEIGHT

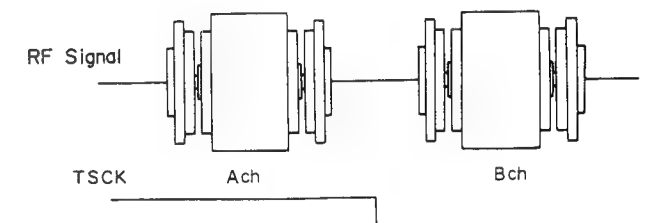


Figure 32-3

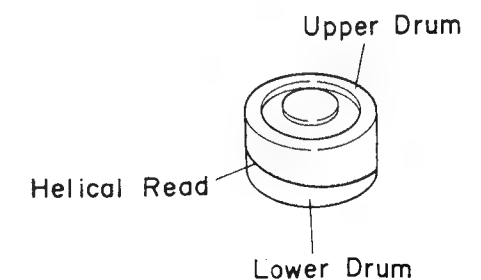


Figure 32-4



## ADJUSTMENT

## Envelop waveform

	Tape lift		Tape sink	
	Entrance side	Exit side	Entrance side	Exit side
Envelop waveform				
Adjustment procedure	Turn the entrance side guide roller clockwise (lower the guide roller) to get flat envelope.	Turn the exist guide roller clockwise (lower the guide roller) to get flat envelope.	At first turn the entrance guide roller counterclockwise (raise the guide roller) to lift the tape. Then, turn the entrance guide roller clockwise to get flat envelope.	At first turn the exit guide roller counterclockwise (raise the guide roller) to lift the tape. Then turn the exit guide roller clockwise to get flat envelope.

**Note:** The broken line indicates the envelope waveform in the state when the tape lift or sink becomes remarkable.  
After completion of adjustment finally tighten the guide roller with the guide roller tightening screw (in unloading state).  
Again set the playback mode, and check for change of envelope waveform.

## Adjustment of height of entrance post, exit post and tape guide

- After completion of adjustment of guide roller height adjust the entrance post, exit post and tape guide nuts, and adjust the nuts of exit post and tape guide so that the tape runs at a distance of 0.1 mm from the lower flange.
- Adjust so that the entrance post lower flange contacts the lower edge of tape in PLAY mode.
- Ascertain that the running tape is free from creases and deformation.
- Adjust so that lower edge of tape contacts the exit post and tape guide lower edge in the same condition s as stated for the entrance post.
- After completion of adjustment apply the screw lock agent so that it does not protrude from the front end of shaft.

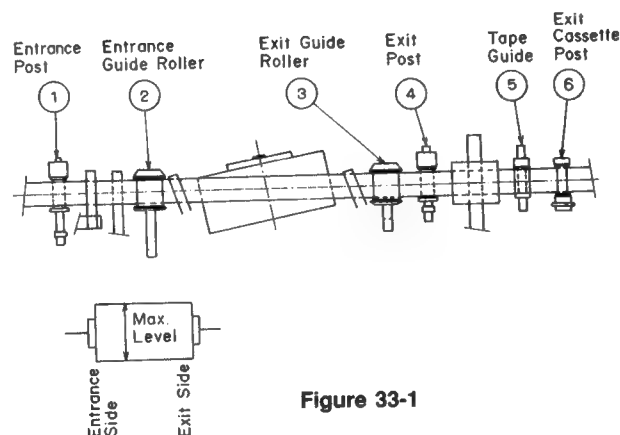


Figure 33-1

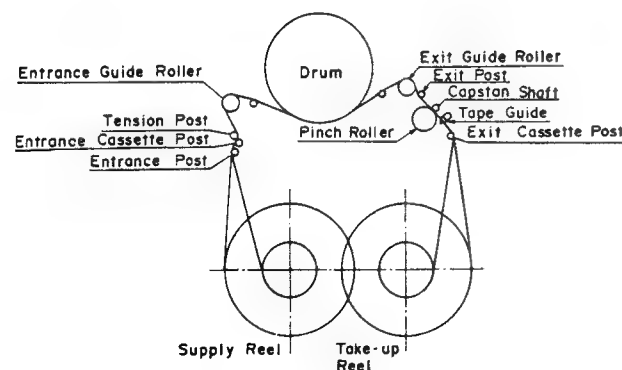


Figure 33-3

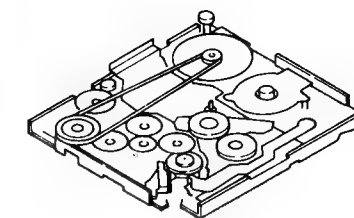
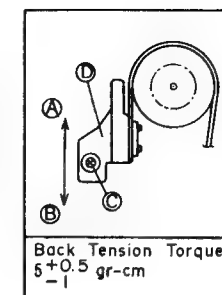
- Entrance post  
The tape must contact the lower flange.
- Entrance guide roller  
The tape must contact the upper flange.  
The roller must be at the lower flange side.
- Exit guide roller  
The tape must contact the lower flange.
- Exit post  
(in tape guide axis of tape guide base)
- Tape guide
- The tape must run at the center of exit cassette post.

Figure 33-2

## ADJUSTMENT

## Back tension adjustment

- Torque meter  
SONY's TW-7131
- Fit the back tension torque meter TW-7131 to the mechanism.
  - After indication of the back tension torque meter at the feed reel side is stabilized, shift the position of band brake fixing part ① in the direction of ②, and adjust so that the torque meter indicates  $5.0 \pm 0.5 - 1$  g.cm, and then tighten the set screw ③. At this time the tightening torque must be  $0.9 \pm 0.2$  kg.cm.
  - After tightening the set screw measure again the back tension to ascertain that it is equal to  $5.0 \pm 0.5 - 1$  g.cm.
  - After completion of adjustment lock the set screw ③.



Play/Back Tension Torque Cassette

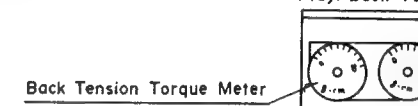


Figure 34-1 BACK TENSION

## Adjustment of DAT circuit

Adjusting tape  
SONY's TY-7111 reference tape

## Preparation for adjustment

- Prepare the following adjusting tape.
- Following the preparatory disassembling method for circuit adjustment which is performed while the tape is running, remove the cabinet, cassette lid and guide plate.
- Open the cassette holder, referring to the cassette take-out method in case se of trouble, page 22.

Below is described a method to operate after PWB has been disassembled.

Prepare the following.

Careless erasing prevention switch flexible PWB (sort-circuit the switch mounting side).  
Part code RUNTH0008AFZZ

- Apply the black tape to the upper surface of reel sensor (photo interrupter PH202, PH203).
- Connect the measuring jig shown in Fig. 34-2, and apply 100 Hz, 1.5 V from the oscillator.
- Disconnect the connector CNP202, 203 (EOT, BOT). Adjustment is possible with the connector disconnected.
- Remove the dew sensor VH200 to short-circuit.
- Remove the careless erasing prevention switch flexible CNP201, and mount the previously prepared flexible PWB.

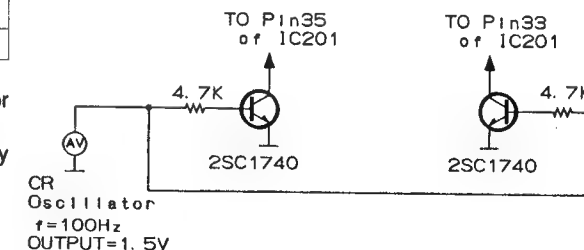


Figure 34-2

## ADJUSTMENT

## Test mode setting method

Error display	Turn on power supply pressing simultaneously REW and PLAY.
Operation without cassette	Turn on power supply, pressing simultaneously REW and STOP.

## EOT/BOT sensitivity adjustment

Insert the white half of the DAT cassette facing up and set the unit to the FF or REW mode.

Adjusting Point	Specified value	Instrument Connection
BOT:VR204 EOT:VR205	4.0 to 4.5 V	Fig. 35-1

If there is no white half to the DAT cassette, a black cassette can be used.

## Offset adjustment

Adjust in halt state.

Adjusting Point	Specified value	Instrument Connection
VR202 VR203	2.5V $\pm$ 0.2 V 2.5 V $\pm$ 0.2 V	AFOFS AOFST Fig. 35-2

## Drum PG phase adjustment

Play back the reference tape TY-7111.

Adjusting Point	Adjusting method	Instrument Connection
VR201	Adjust so that PBSG wave (ATF pilot signal 130 kHz) partcoincides with H level of ATFMAD waveform. (Error $\pm$ 20 $\mu$ S)	Fig. 35-3 to 5

Ascertain the PBSG signal is about 500 mVp-p.

## VCO free run frequency adjustment

Short-circuit the test points CC1 and CC2, and adjust in halt state.

Adjustment	Specified value	Instrument Connection
L452	6.270 MHz $\pm$ 50 kHz	Fig. 35-6

After adjustment release short-circuit.

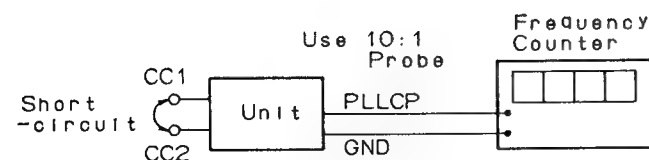


Figure 35-6 VCO FREE RUN FREQUENCY

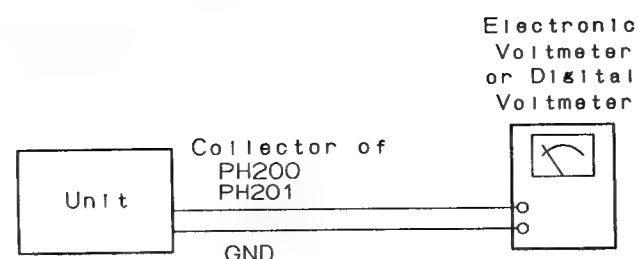


Figure 35-1 EOT/BOT SENSITIVITY

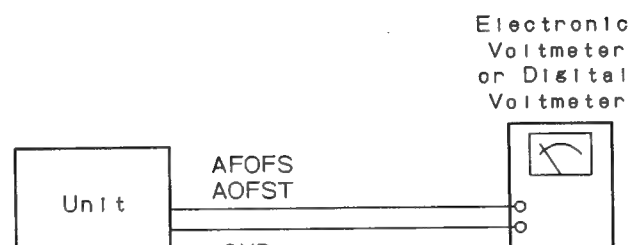


Figure 35-2 OFFSET

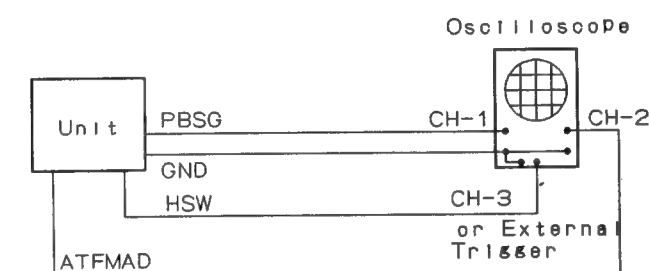


Figure 35-3 DRUM PG PHASE

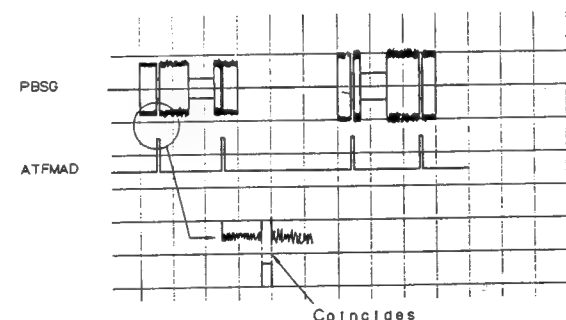


Figure 35-4 DRUM PG PHASE

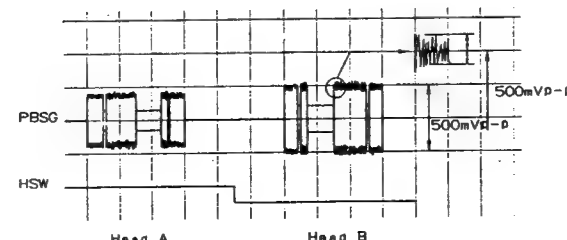


Figure 35-5 DRUM PG PHASE

## ADJUSTMENT

## Error rate adjustment

- Setting of "error display" test mode.
- Playback commercially available music tape, and adjust VR401 and VR451 so as to minimize the error display (less than 50).

## Digital input PLL adjustment

- Prepare a normal DAT deck, connect it to the DIGITAL INPUT jack with the digital connection cord, and playback the tape on which a material was recorded at sampling frequency 44.1 kHz. Or connect the CD player provided with the digital output terminal with the digital connection cord, and playback CD.

- Load a blank tape in the DAT to be adjusted, set the cassette-less test mode, and press the REC button.

Adjusting Point	Adjusting method	Instrument Connection
L101	In lock state (33 Hz component does not exist) adjust to get -0.6 V.	Fig. 36-1 and 2.

In case of sampling frequency 48 kHz set within -0.8 to -1.2 V.

## Record current adjustment

(when a current probe is used)

- Prepare a normal DAT deck, connect it to the DIGITAL INPUT jack with the digital connection cord, and playback the tape on which a material was recorded at sampling frequency 48 kHz. Or connect the CD player provided with the digital output terminal with the digital connection cord, and playback CD.

- Set the cassette-less test mode, and press the REC button.

Adjusting Point	Specified value	Instrument Connection
A head section PCM section: VR404 ATF section: VR402	9.5 mA $\pm$ 0.5 mA 6 mA $\pm$ 0.5 mA	Fig. 36-3
B head section PCM section: VR405 ATF section: VR403	9.5 mA $\pm$ 0.5 mA 6 mA $\pm$ 0.5 mA	Fig. 36-3

(when a current probe is not used)

- Using a tape which has been recorded on a normal DX-7, measure the error rate of the machine being repaired. While the tape is playing back on the machine being tested, adjust VR404 and VR405 so that the error rate is below 50.

(Reference: When the error rate is high (over 50), the recording current is insufficient.)

- When the error rate of a machine under repair is below 50, record a tape on it and then play the tape back on a normal RX-P1. The error rate must be under 50.

(Reference: When the error rate is high (over 50), the recording current is too high.)

- Generally, it should not be necessary to adjust VR402 or VR403.

## Battery voltage detection

- Connect DC power source to the DC IN jack, and apply 5.1  $\pm$  0.01 V.

Adjusting Point	Adjusting method	Instrument Connection
VR801	Adjust at the point where level changes from H level to L level.	Fig. 36-3

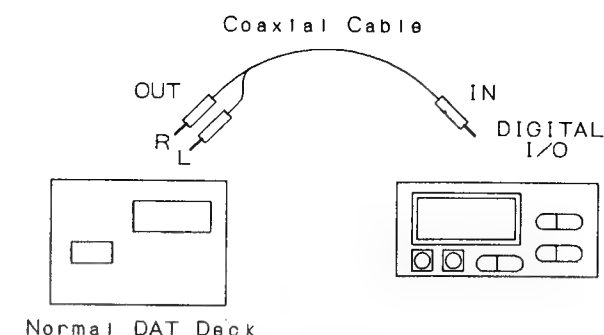


Figure 36-1 DIGITAL INPUT PLL

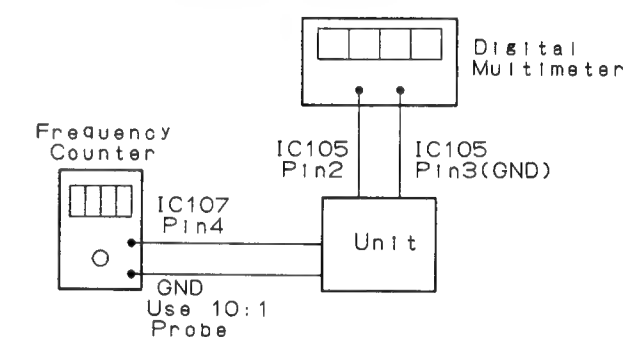


Figure 36-2 DIGITAL INPUT PLL

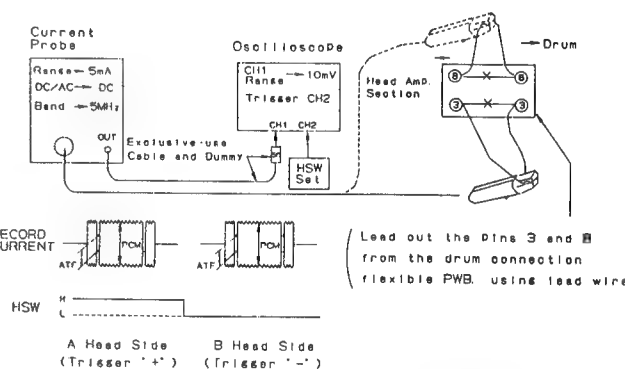


Figure 36-3 RECORD CURRENT

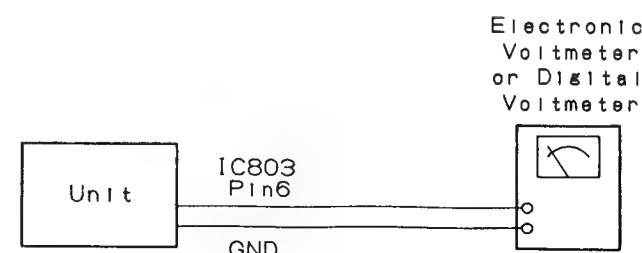


Figure 36-4 BATTERY VOLTAGE DETECTION

## ADJUSTMENT

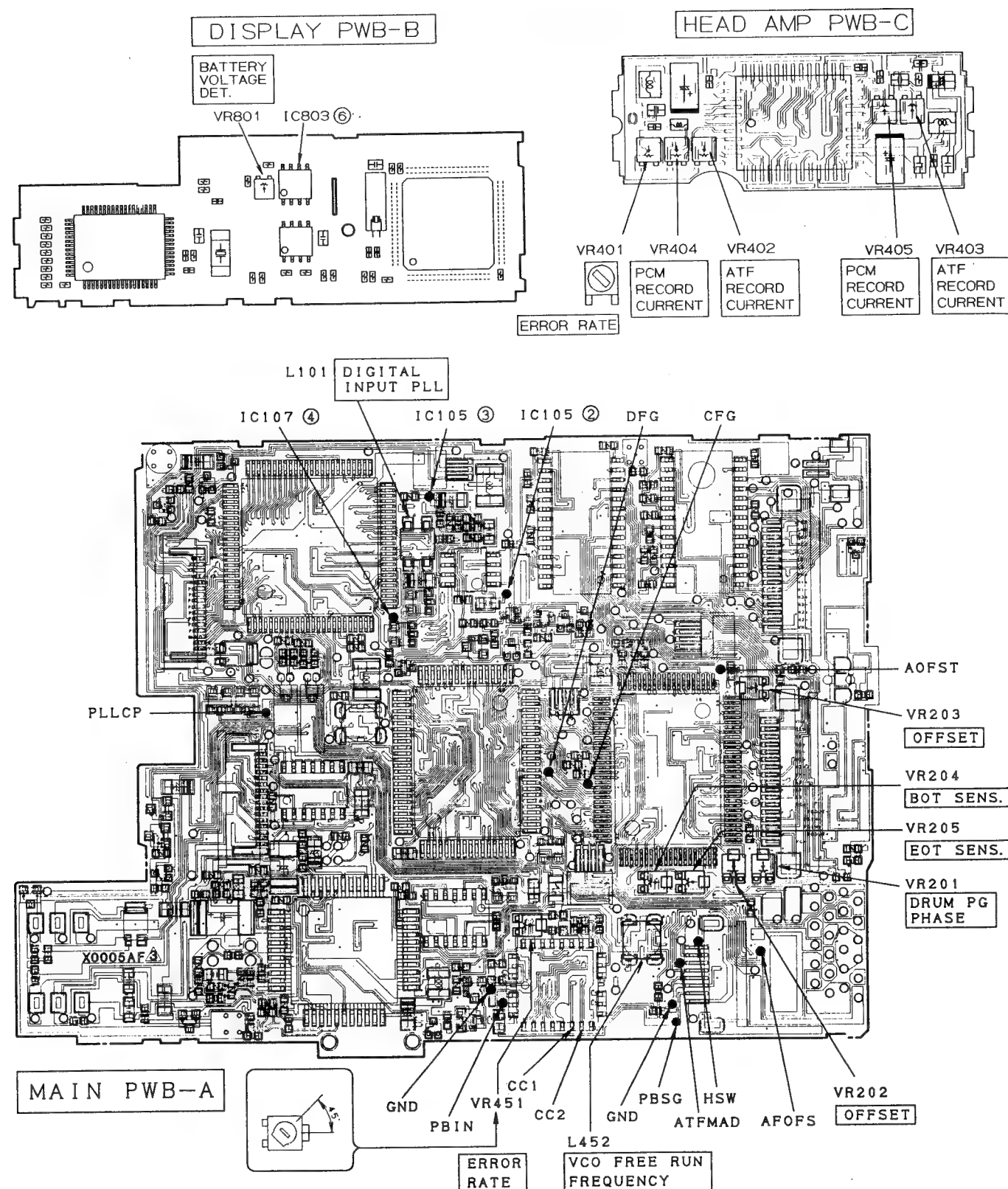
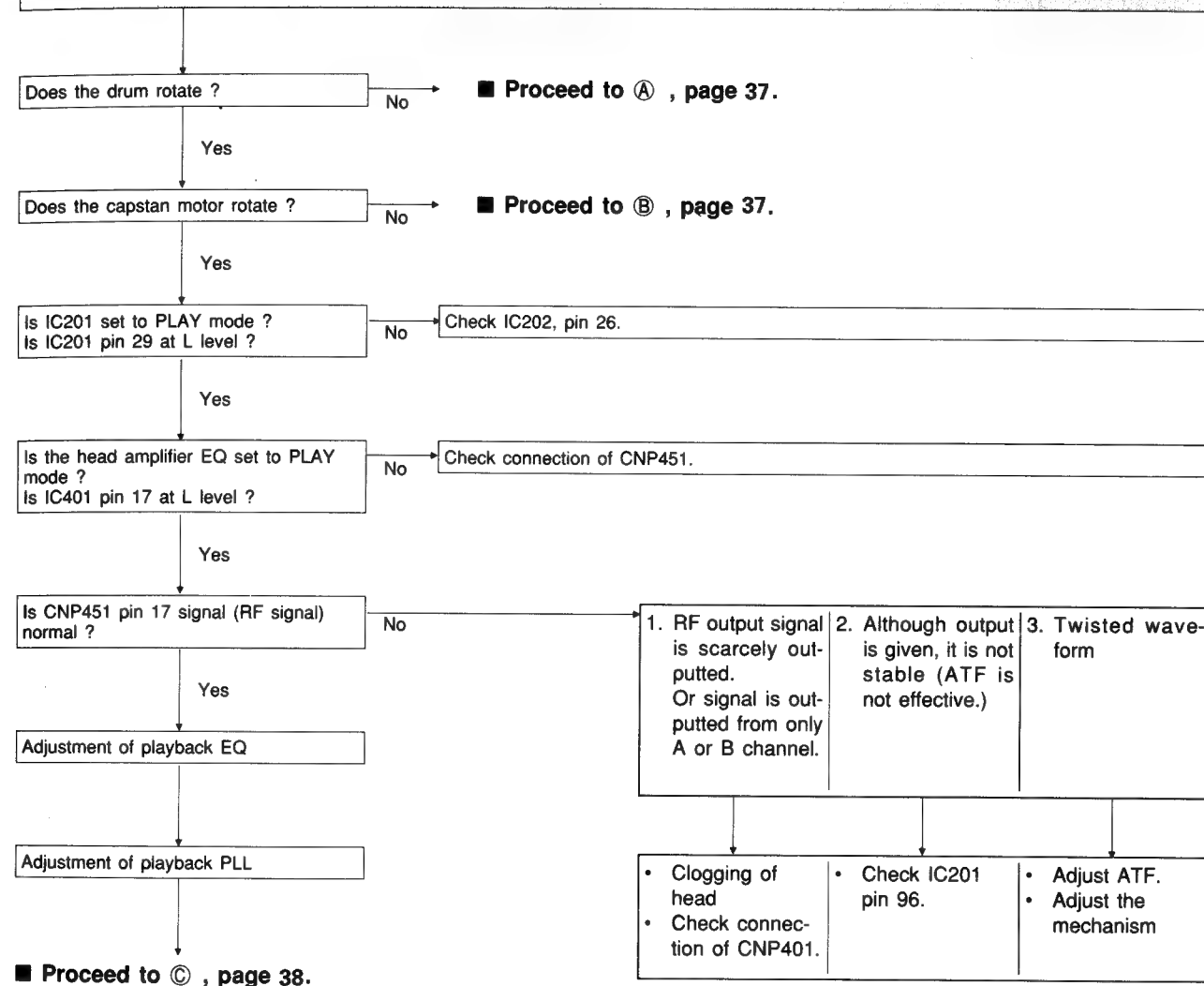


Figure 37 ADJUSTMENT POINTS

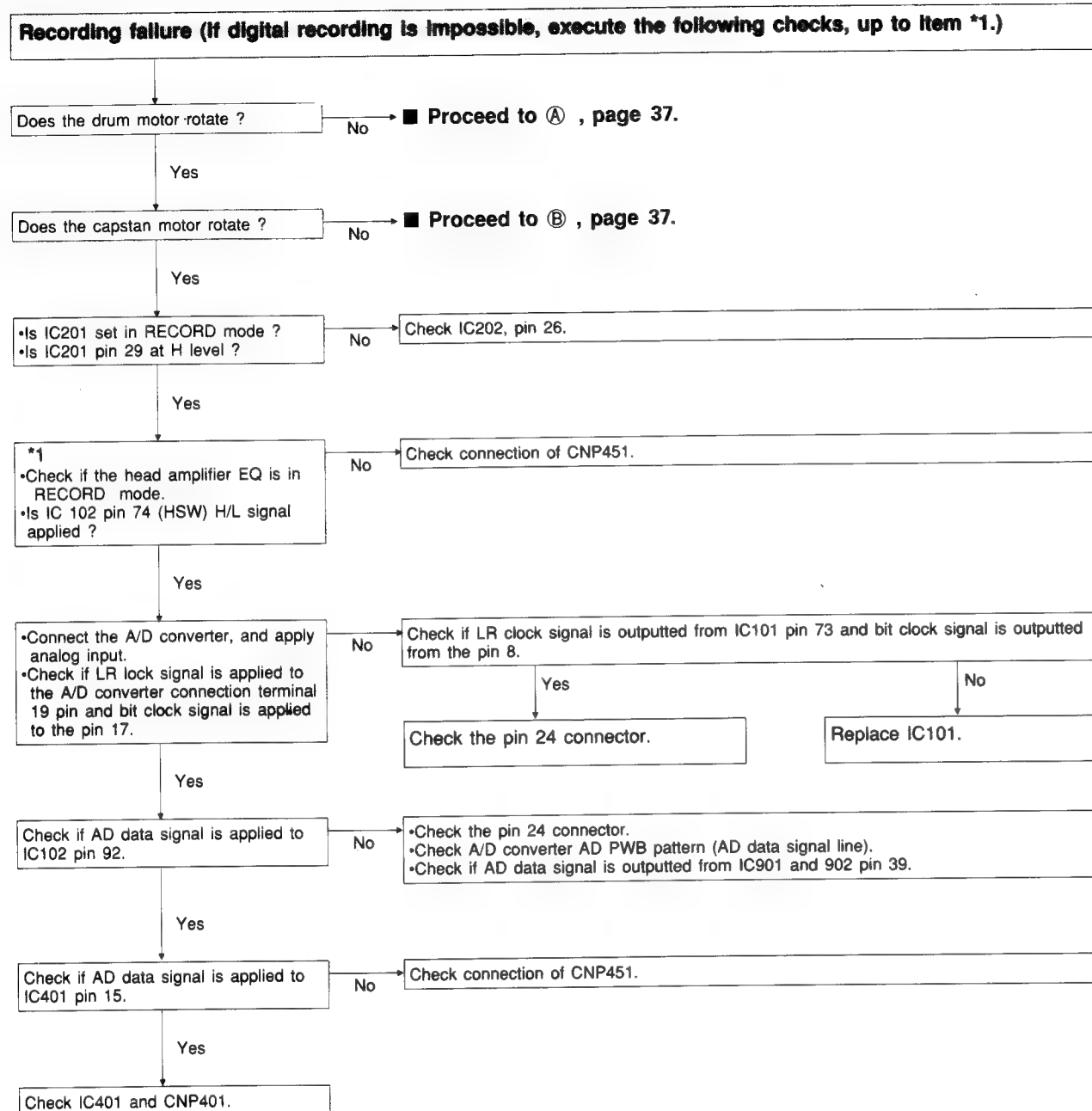
## TROUBLESHOOTING

## Remove the cabinet

Sound is not heard when the PLAY key is pressed.

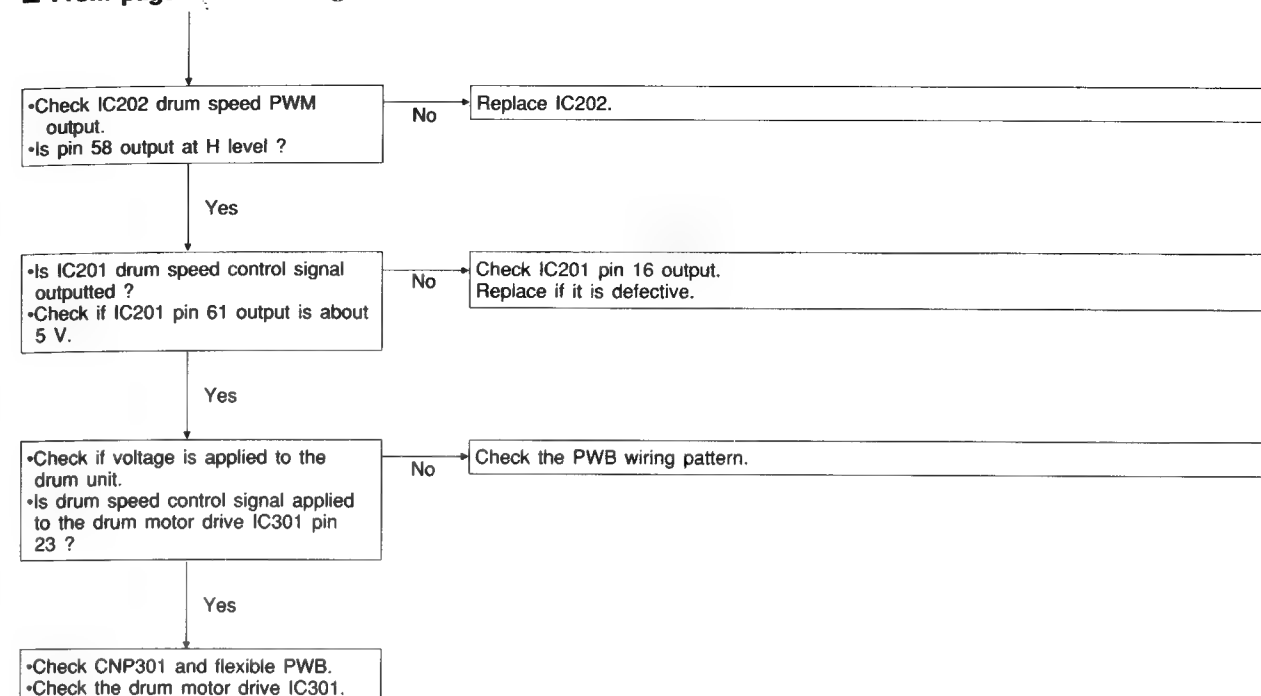


## TROUBLESHOOTING

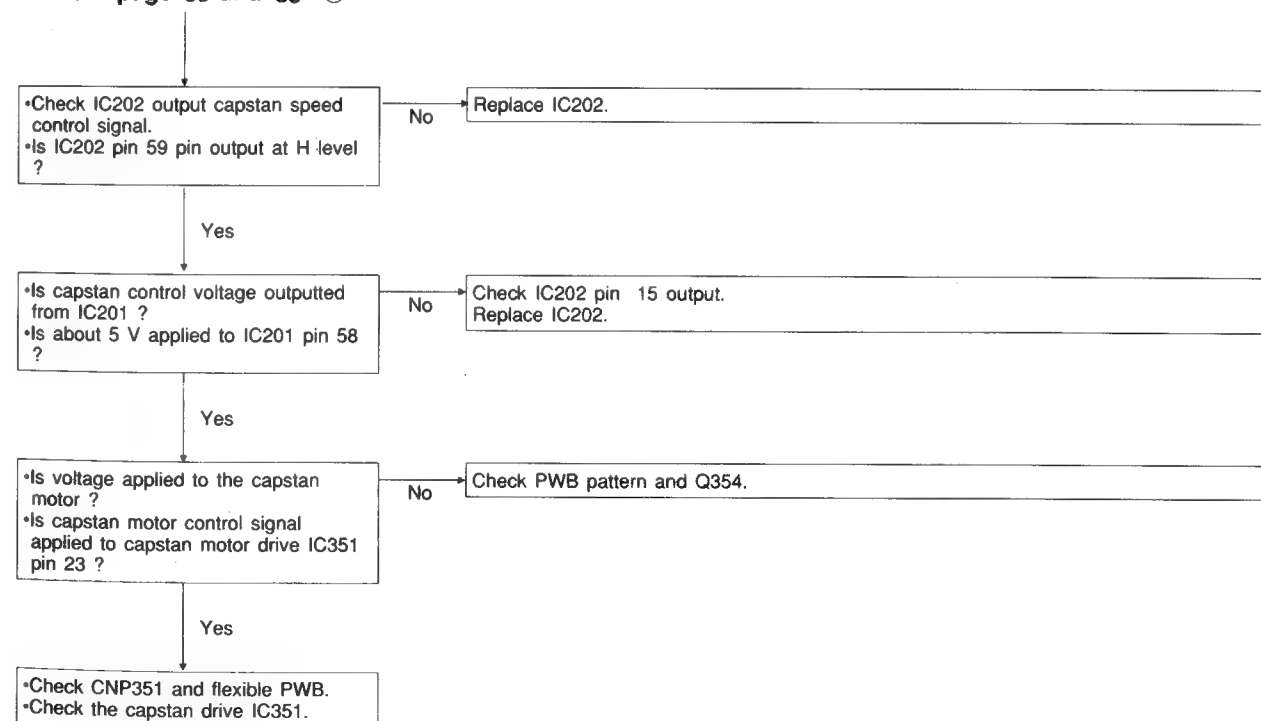


## TROUBLESHOOTING

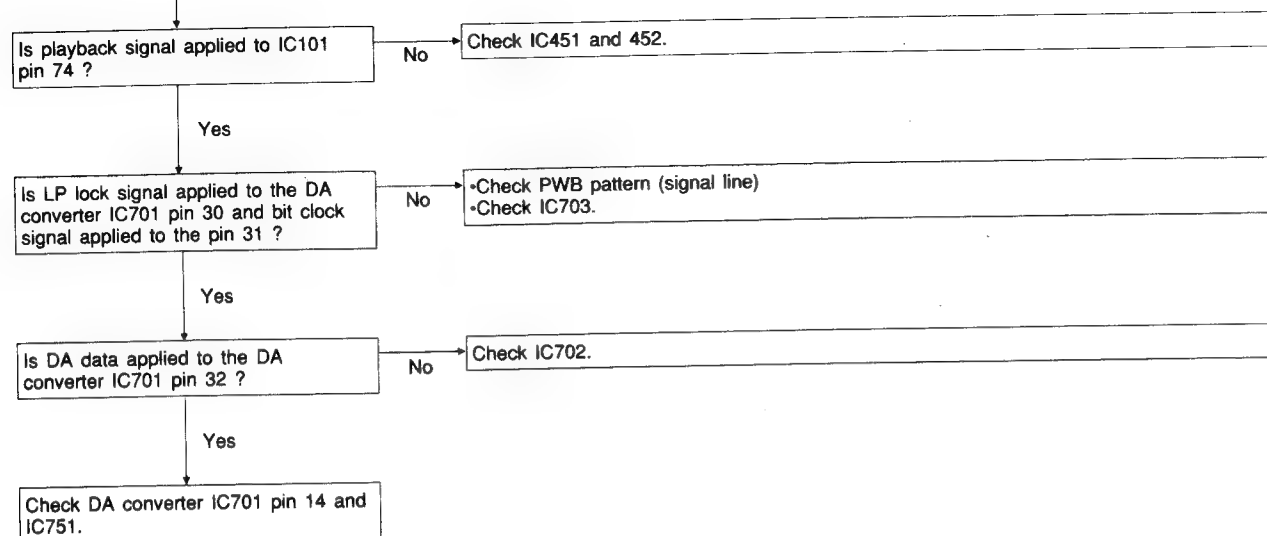
## ■ From page 35 and 36 ③



## ■ From page 35 and 36 ④



■ From page 35 ©



## IC101 VHiLR3823B/1 (LR3823B)

Pin No.	Terminal Name	Input/Output	Function
1	COMD	Input	Microcomputer command signal input
2	RQTCK	Input	Microcomputer request clock
3	DRMSYNC	Input	Drum sync. signal input
4	DFCK	Output	Clock output for digital filter
5*	C1FLAG	Output	C1 error flag (pulse) output
6	TEST	Input	Test terminal (usually L is inputted)
7	XBI	Input	Crystal oscillator is connected 22.5792 MHz
8	XBO	Output	Crystal oscillator is connected 22.5792 MHz
9	XCI	Input	Crystal oscillator is connected 24.576 MHz
10	XCO	Output	Crystal oscillator is connected 24.576 MHz
11	DSYNC	Output	Digital mute signal output L: Mute mode
12	GND	-	Earth
13	VCC (5V)	-	Power supply
14	DIGO	Output	Digital interface signal output
15	DIGI	Input	Digital interface signal input
16	VCO IN	Input	PLL clock input in digital IN mode
17	VCO A	Output	Phase comparison output for PLL in digital IN mode
18	VCO B	Output	Phase reference output for PLL in digital IN mode
19*	AUX0	Input/Output	Digital interface AUX input/output (LSB)
20*	AUX1	Input/Output	Digital interface AUX input/output (bit 1)
21*	AUX2	Input/Output	Digital interface AUX input/output (bit 2)
22*	AUX3	Input/Output	Digital interface AUX input/output (MSB)
23*	CUIO	Input/Output	C channel/U channel input/output
24	CUCK	Input	C channel/U channel data shift clock input
25	CUSEL	Input	C channel/U channel data selection
26*	CURQ	Output	C channel/U channel data input/output request signal
27*	UOUT	Output	U channel data output monitor terminal
28*	COUT	Output	C channel data output monitor terminal
29*	DIN	Output	Digital interface input/output signal monitor terminal
30	TDSC	Input	Select terminal for test (usually L is inputted)
31	TDSA	Input	Select terminal for test (usually H is inputted)
32	TDSB	Input	Select terminal for test (usually L is inputted)
33	RESET	Input	Reset signal input terminal
34	DB0	Input	Memory data bus (LSB)
35	DB1	Input	Memory data bus
36	GND	-	Earth
37 to 41	DB2 to 6	Input	Memory data bus

Pin No.	Terminal Name	Input/Output	Function
42	DB7	Input	Memory data bus (MSB)
43	RRQT	Output	ECC data read request signal
44	WRQT	Output	ECC data write request signal
45	INACP	Input	A port latch clock input
46	IDB0	Input/Output	ECC internal bus (LSB)
47 to 52	IDB1 to 6	Input/Output	ECC internal bus
53	IDB7	Input/Output	ECC internal bus
54	ORB CP	Output	Latch clock of ECC output port A
55	ORA CP	Output	Latch clock of ECC output port B
56	ECC PR	Input	ECC PLAY/RECORD selection signal input
57	PQ.KIR	Input	ECC C1/C2 selection signal input
58	GLU.R	Input	ECC reset signal input
59	VCC (5V)	-	Power supply
60	GND	-	Earth
61	SLATCH	Input	Syndrom latch signal input
62	S.SHIFT	Input	Syndrom shift clock input
63	NEXT	Output	Next state signal output
64	SNDSTT	Output	Syndrom calculation start signal
65	ECC SUB	Input	ECC subcode sarea signal input
66	ECC CK	Input	ECC clock input terminal
67	DEMDAT	Output	Playback data output
68	DCP	Output	Playback data shift clock output
69	DRESET	Output	Playback data fetching reset signal
70	CDCP	Output	Control data shift clock output
71	ADLOAD	Output	Block address load signal
72	DIRQT	Output	Playback data fetching request signal
73	IDP	Output	ID parity check result output
74	PBSG	Input	Playback signal input
75	PLLCP	Input	Playback clock input
76	DEMCOD1	Input	NRZI demodulation code input
77	DEMCOD0	Output	NRZI demodulation code output
78*	M.SYNC	Output	Playback data block sync signal
79	LOAD CP3	Output	Data load signal
80	ADCARY	Output	Data carrier signal
81	DADDAT	Output	Digital interface playback data
82*	D.FRAME	Output	Digital interface frame signal
83	DADATA	Input	DA data input terminal
84	D.SHIFT	Output	Data shift clock
85	GND	-	Earth
86	LR2	Output	L/R double signal
87	LR	Output	L/R signal
88	D.FLAG	Output	Interpolation flag
89	PD0	Input/Output	Microcomputer bus (LSB)
90 to 95	PD1 to 6	Input/Output	Microcomputer bus
97	PD7	Input/Output	Microcomputer bus (MSB)

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

CIRCUIT DESCRIPTION

IC102 VHiLR3822A/-1 (LR3822A)

Pin No.	Terminal Name	Input/Output	Function
1	DIRQT	Input	DI request
2	ADLOAD	Input	Block address load
3	CDCP	Input	CD shift clock
4	DRESET	Input	D reset
5	DCP	Input	D shift clock
6	DEMDAT	Input	Playback data
7	ECC CK	Output	ECC clock
8	ECC SUB	Output	ECC subcode area
9	SNDSTT	Input	Syndrome shift CP
10	NEXT	Input	Next start
11	S.SHIFT	Output	Syndrome shift CP
12	GND	-	Earth
13	VCC	-	Power supply +5V
14	SLATCH	Output	Syndrome alth
15	GLU.R	Output	GLU reset
16	PQKIR	Output	ECC P,Q selection
17	ECC PR	Output	ECC PLAY/REC selection
18	ORA CP	Input	Output A port latch CP
19	ORB CP	Input	Output B port latch CP
20 to 27	EDB7 to 0	Input	Internal bus
28	INACP	Output	A port input clock
29	WRQT	Input	ECC write request
30	RRQT	Input	ECC lead request
31 to 35	DB7 to 3	Input/Output	Memory data bus
36	GND	-	Earth
37 to 39	DB2 to 0	Input/Output	Memory data bus
40 to 47	A0 to 7	Output	Memory data bus
48, 49	A12, 14	Output	Memory address
50	RAMWE	Output	Write enable
51	A13	Output	Memory address
52	A8	Output	Memory address
53	A9	Output	Memory address
54	A11	Output	Memory address
55	RAMOE	Output	Output enable
56	A10	Output	Memory address
57	RAMCE	Output	Chip enable

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

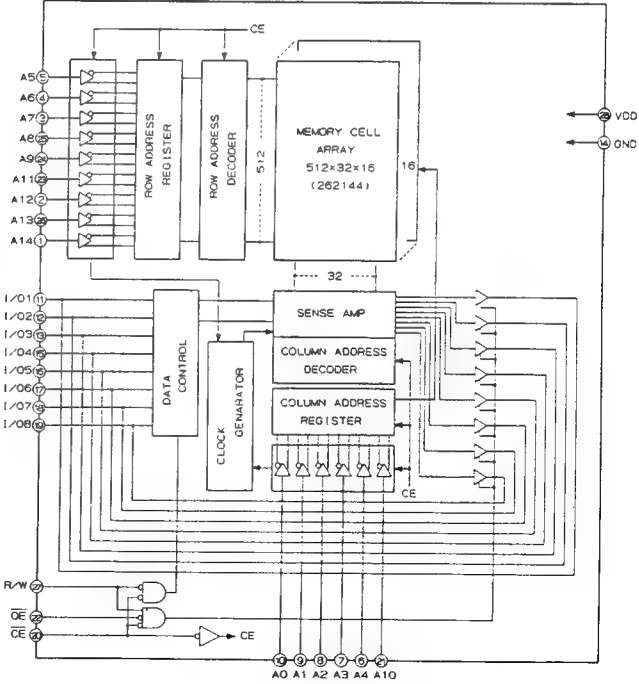
Pin No.	Terminal Name	Input/Output	Function
58*	SEG CP	Output	Segment clock
59	VCC (5V)	-	Power supply +5V
60	GND	-	Earth
61	TEST	-	Test terminal (usually GND)
62	RESET	Input	Power ON reset input
63	CXAI	Input	Crystal oscillator connection terminal
64	CXAO	Output	Crystal oscillator connection terminal; 18.816 MHz
65	D20CK	Output	6.272 MHz output
66	FCH	Input	Channel clock input
67	DSVCK	Output	9.408 MHz output
68	TSCK	Output	Servo drum sync output
69*	TSCK15V	Output	Double scan sync output
70	RCSG	Output	Record signal output
71	HEACH	Output	Head record/playback selection
72	ATFMAD	Output	ATF window signal output
73	FRAME	Output	Playback frame signal
74	HSW	Input	Head switch
75	DRMSYNC	Output	Drum sync signal
76	RQTCK	Input	Microcomputer request clock
77	COMD	Input	Microcomputer command
78 to 84	PD7 to 1	Input/Output	Microcomputer bus
85	GND	-	Earth
86	PD0	Input/Output	Microcomputer bus
87	D.FLAG	Input/Output	Interpolation flag
88	LR	Input	LR signal
89	LR2	Input	LR double signal
90	D.SHIFT	Input	Data shift clock
91	DADATA	Output	Digital input signal
92	ADDATA	Input	AD data input
93	DADDAT	Input	DA data output
94	ADCARY	Input	Carrier
95	LOADCP3	Input	Load clock
96	IDP	Input	ID parity

CIRCUIT DESCRIPTION

IC103 VHiMB84256/-1 (MB84256)

Pin No.	Terminal	Input/Output	Function
1	A14	Input	Address input
2	A12	Input	Address input
3	A7	Input	Address input
4	A6	Input	Address input
5	A5	Input	Address input
6	A4	Input	Address input
7	A3	Input	Address input
8	A2	Input	Address input
9	A1	Input	Address input
10	A0	Input	Address input
11	I/O1	Input/Output	Data input/output
12	I/O2	Input/Output	Data input/output
13	I/O3	Input/Output	Data input/output
14	GND	-	Earth
15	I/O4	Input/Output	Data input/output
16	I/O5	Input/Output	Data input/output
17	I/O6	Input/Output	Data input/output
18	I/O7	Input/Output	Data input/output
19	I/O8	Input/Output	Data input/output
20	CE	Input	Chip enable input
21	A10	Input	Address input
22	OE	Input	Output enable input
23	A11	Input	Address input
24	A9	Input	Address input
25	A8	Input	Address input
26	A13	Input	Address input
27	R/W	Input	Lead/write control input
28	VCC	-	Power supply (+5 V)

IC103 VHiMB84256/-1 (MB84256)





## CIRCUIT DESCRIPTION

## IC201 VH1R3R45/-1 (IR3R45)

Pin No.	Terminal Name	Input/Output	Signal Name	Connection	Function
1, 2, 3	LPSY, SPSY, SYRF	-	-	-	ATF sync signal detection circuit external mounting C, R connection terminal
4	EVREF	-	-	-	For envelope waveform, reference voltage is applied
5	EV130	-	-	-	For pilot 130 kHz, external mount connection
6	ATFSY	Output	-	-	For playback signal ATF sync signal detection
7	F130	Output	-	-	Pilot 130 kHz signal
8	ENV130	Output	-	-	Pilot 130 kHz envelope signal
9	INSN	Input	-	-	To be connected to earth
10	SH1P	Input	ATF sample hold 1 input	-	Input terminal for ATF error voltage sample hold
11	SH2P	Input	ATF sample hold 2 input	-	Input terminal for ATF error voltage sample hold
12	DGND	-	Digital GND	-	Earth
13	RSE	-	Reel servo circuit	-	Reel servo circuit
14	CSE	Input	Capstan speed error	DSV	1 to 5 kHz PWM input, 0 to 5 V
15	CPE	Input	Capstan phase error	DSV	0 to 5 V analog voltage input
16	DSE	Input	Drum speed error	DSV	1 to 5 kHz PWM input, 0 to 5 V
17	DPE	Input	Drum phase error	DSV	0 to 5 V analog voltage input
18	DVcc	-	Digital Vcc	-	Digital +5V power supply
19	CFG	Output	Capstan FG	-	Capstan FG comparator output
20	DFGO	Output	Drum FG	DSV	Drum FG comparator output
21	DPGO	Output	Drum PG	DSV	Drum PG comparator output
22	TRLS	Output	-	-	Take-up reel FG signal
23	SRLS	Output	-	-	Supply reel PG signal
24	BOTO	Output	-	Microcomputer	BOT comparator output
25	EOTO	Output	-	Microcomputer	EOT comparator output
26	DEWO	Output	Dew sensor	-	Dew sensor output
27	SP/LP	Input	-	-	48 kHz - 33 kHz long play selection signal
28	AFREC	Input	After-recording control	Microcomputer	H: After-recording, L: Ordinary
29	R/P	Input	Record/playback control	Microcomputer	H: Record, L: Playback
30 to 32	A to C	Input	-	-	Reel motor servo selection circuit signal A to C
33	TNI	Input	-	Mechanism	Take-up reel rotation pulse input
34	NREF	-	-	-	Capstan phase PWN input
35	SNI	Input	-	Mechanism	Supply reel rotation pulse input
36	BOTI	Input	-	Mechanism	BOT sensor input
37	EOTI	Input	-	Mechanism	EOT sensor input
38, 39	RSEL1, 3	-	-	-	Reel servo circuit external mount part
40	GND	-	-	-	Earth
41*	RSE0	-	-	-	Reel servo circuit external mount part
42	RSFB1	-	-	-	Reel servo circuit external mount part
43	RSEC1	-	-	-	Reel servo circuit external mount part
44*	RSEL4	-	-	-	Tension amplifier circuit external mount part
45*	RSFB2	-	-	-	Tension amplifier circuit external mount part
46*	SRCTL	Output	-	-	Reel motor voltage control terminal
47*	TRCTL	Output	-	-	Reel motor voltage control terminal
48	RSEL2	Input	-	-	Tension amplifier circuit external mount part
49, 50	RSEL5, 6	-	-	-	Tension amplifier circuit external mount part
51*	REW	-	-	-	Tension amplifier REW signal
52	RSEL7	-	-	-	Tension amplifier external mount part
53	STNS	Input	-	-	Tension sensor input signal
54	DEW1	Input	-	Mechanism	Dew sensor input signal
55	DPGMM	Input	Drum PG monomulti	-	Drum PG phase adjusting terminal
56	DPG-	Input	Drum PG-	Drum motor	Drum PG comparator - input
57	DPG+	Input	Drum PG+	Drum motor	Drum PG comparator + input
58	DPGREF	Output	Drum PG reference voltage	-	Drum PG comparator 2.5 V voltage
59	DFGI	Input	Drum FG input	Drum motor	Drum FG comparator
60	DFGREF	-	Drum FG reference voltage	Drum motor	2.5 V voltage for drum FG comparator

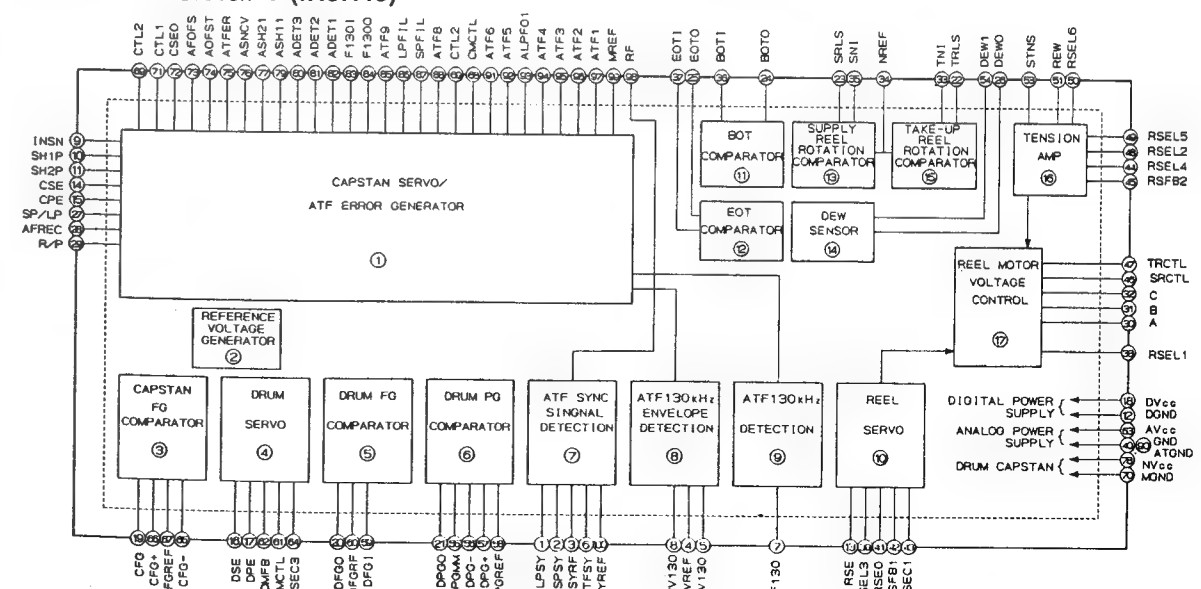
In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

## CIRCUIT DESCRIPTION

Pin No.	Terminal Name	Input/Output	Signal Name	Connection	Function
61	DMCTL	Output	Drum control voltage	Drum motor driver	Drum motor applied voltage
62	DMFB	-	Drum feedback	-	Feedback terminal of DCTLV amplifier
63	AVcc	-	Analog Vcc	-	Analog +5V power supply
64	DSEC3	Input	DSE capacitor 3	-	Terminal for capstan speed error LPF capacitor
65, 66	CFG-, CF+	Input	Capstan FG signal	Capstan motor	Capstan FG comparator signal
67	CFGREF	-	Capstan FG reference voltage	-	2.5 V voltage for capstan FG comparator
68	CMCTL	Output	Capstan control voltage	Capstan motor driver	Capstan motor applied voltage
69	CTL2	-	-	-	Capstan motor control 2 signal
70	MGND	-	Mechanism ground	-	Earth
71	CTL1	-	-	-	Capstan motor control 1 signal
72	CSEO	-	-	-	Capstan phase PWM signal
73	AFOFS	Input	ATF after-recording offset	-	Terminal for offset adjustment in case of ATF error signal after-recording
74	AOFST	-	ATF offset	-	Terminal for offset adjustment of ATF error signal
75	ATFER	-	-	-	ATF error generator external mount C, R
76	ASNCV	-	-	-	ATF error generator external mount C, R
77	ASH21	-	ATF sample hold 2 input	-	Terminal after ATF error voltage sample hold
78	NVcc	-	-	-	Power supply terminal for drum and capstan circuit
79	ASH11	-	ATF sample hold 1 input	-	Terminal after ATF error voltage sample hold
80	ADET3	-	ATF detection 3	-	Capacitor external mount terminal for ATF pilot signal detection
81	ADET2	-	ATF detection 2	-	Capacitor external mount terminal for ATF pilot signal detection
82	ADET1	-	ATF detection 1	-	Capacitor external mount terminal for ATF pilot signal detection
83, 84	F130I, F130O	-	-	-	Capstan servo external mount C, R are connected.
85	ATF9	-	-	-	Capstan servo external mount C, R are connected.
86*, 87	LPFIL, SPFIL	-	-	-	Capstan servo external mount C, R are connected.
88, 89	ATF8, 7	Input	ATF low-pass filter 3	-	ATF pilot signal, LPF amplifier input terminal
90	ATGND	-	ATF ground	-	Earth
91*, 92*	ATF6, 5	Input	ATF low-pass filter 2	-	ATF pilot signal, LPF amplifier input terminal
93	ALPF01	Output	ATF low-pass filter 1	-	ATF pilot signal, LPF amplifier output terminal
94 to 97(95*, 96*)	ATF4 to 1	Output	ATF low-pass filter 1	-	ATF pilot signal, LPF amplifier output terminal
98	RF	Input	RF signal	-	Playback RF signal input
99	MREF	-	-	-	ATF error generator external mount C, R are connected.
100	SYREF	-	-	-	ATF sync signal detection circuit external mounting C, R connection terminal

In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

## IC201 VH1R3R45/-1 (IR3R45)



CIRCUIT DESCRIPTION

IC202 VHiLR3821B/-1 (LR3821B)

Pin No.	Terminal Name	Input/Output	Function
1	PD1	Input/Output	Microcomputer bus
2	PD0	Input/Output	Microcomputer bus
3	DRMSYNC	Input	Drum motor sync signal
4	FRMSY	Input	Frame input for ATF
5	D15V	Input	Double scan ATF mask signal
6	TSCK	Input	Drum sync input
7	CK94	Input	Clock 9.408 MHz input
8	CKA	Input	Transfer clock input
9*	RCSGO	Output	Output terminal for test
10*	HSWOUT	-	-
11	RESET	Input	Power ON reset input
12	GND	-	Earth
13* to 15*	NC	-	Not connected internally
16	CAP-STOP	Output	Capstan motor stop signal
17	CAP-REV	Output	Capstan motor reverse signal
18	LED-ON	Output	BOT, EOT sensor LED-ON output signal
19	LM+	Output	Tape loading motor forward rotation output signal
20	LM-	Output	Tape loading motor reverse rotation output signal
21	CDRIV	Output	Drum motor control signal
22	DRMSTOP	Output	Drum motor stop signal
23*, 24*	NC	-	Not connected internally
25	DENP	Output	De emphasis control signal
26	REC/PLAY	Output	Record/Playback selection signal
27	AFREC	Output	After-recording control. H: After-recording, L: Usual
28	F.PLAY	Output	Microcomputer extension output port
29	RCSG	Input	ATF high speed mode input
30*	SLOCK	Output	APSS lock signal output
31	ENV OUT	Output	Envelope provided/nonprovided output
32	GND	-	Earth
33	VCC	-	+5 V
34*	NC	-	Not connected internally
35	TRLS	Input	Take-up reel FG
36	SRLS	Input	Supply reel FG
37	DIGITAL	Input	Digital signal input
38	DHS1	Input	Cassette tape DHS1 SW input
39	SW2	Input	Mechanism mode rotary SW 2 input
40	SW1	Input	Mechanism mode rotary SW 1 input
41	SW0	Input	Mechanism mode rotary SW 0 input
42* to 44*	NC	-	Not connected internally.
45	TIMER-ON	Input	Timer ON signal input
46	TIMER-R	Input	Timer record signal input
47	TIMER-P	Input	Timer playback signal input
48	TEST-1	Input	Test terminal
49	TEST-2	Input	Test terminal
50	SRLS	Input	Supply reel FG
51	TRLS	Input	Take-up reel FG
52	GND	-	Earth
53	DPG	Input	Drum PG
54	DFG	Input	Drum FG
55	CFG	Input	Capstan FG
56*	DSVTEST	Input	Input for test (usually open)
57	DPE	Output	Drum phase PWM output
58	DSE	Output	Drum speed PWM output

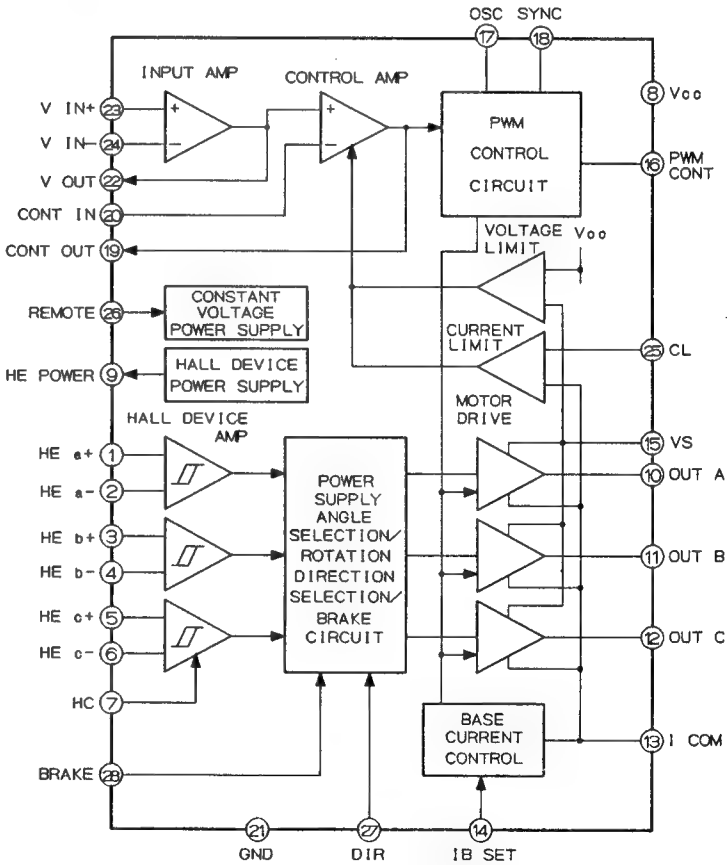
In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

CIRCUIT DESCRIPTION

Pin No.	Terminal Name	Input/Output	Function
59	CPE	Output	Capstan phase PWM output
60*	CSE	Output	Capstan speed PWM output
61	RSE	Output	Reel speed PWM output
62	SH2P	Output	AFT sample hold 2
63	SH1P	Output	ATF sample hold 1
64*	INSN	Output	ATF nonsensing area
65	ENV130	Input	Pilot 130 kHz envelope input
66	F130	Input	Pilot 130 kHz input
67	ENV	Input	Envelope input
68	PBSG	Input	Playback signal input
69	PBSGOR	Input	Playback signal input
70*	HEACH2	Input	Drum head CH2 input
71	VCC	-	+5V
72	GND	-	Earth
73	RQTCK	Input	Microcomputer request
74	COMD	Input	Microcomputer command
75 to 80	PD7 to 2	Input/Output	Microcomputer bus line

In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

IC301, 351 VHICX20036/-1 (CX20036)



## CIRCUIT DESCRIPTION

## IC301, 351 VHiCX20036/-1 (CX20036)

Pin No.	Terminal Name	Input/Output	Function
1	HE a+	Input	Hall device amplifier input terminal, 3phase differential input
2	HE a-	Input	Hall device amplifier input terminal, 3phase differential input
3	HE b+	Input	Hall device amplifier input terminal, 3phase differential input
4	HE b-	Input	Hall device amplifier input terminal, 3phase differential input
5	HE c+	Input	Hall device amplifier input terminal, 3phase differential input
6	HE c-	Input	Hall device amplifier input terminal, 3phase differential input
7*	HC	-	Hysteresis cancel terminal. Cancels in case of Vcc connection. Usually open.
8	Vcc	-	Power supply
9	HE POWER	-	OFF state is set when power save (pin 26 → GND) is set in Hall device power. Current limited is built in.
10	OUTPUT A	Output	Motor connection terminal
11	OUTPUT B	Output	Motor connection terminal
12	OUTPUT C	Output	Motor connection terminal
13	ICOM	-	Motor current monitor terminal. This voltage is used for power transistor base current setting and current limited.
14	IB SET	-	Power transistor base current setting terminal. $R14 = 1.35 \times 10^4 \text{ RNF} \cdot \text{RNF}$ : pin 13 external mount resistor +50 Mohm (IC internal resistor)
15	VS	Input	Motor input voltage terminal. Voltage after passing PWM output to LPF is applied.
16	PWMCONT	Output	PWM control signal output terminal. Control power Transistor is externally mounted.
17	OSC	-	Terminal to connect capacitor for setting of oscillation frequency of PWM oscillator. Oscillation range is 50 k to 200 kHz. $C = (1/f_s) \times 6.8 \times 10^7(\text{PF})$ where $f_s$ is oscillation frequency.
18*	SYNC	Input/Output	Signal input/output terminal to synchronize PWM oscillation frequency with external signal or to synchronize external oscillation frequency
19	CONT OUT	Output	Input/output terminal of PWM loop gain setting. Loop gain is set with external mount resistor.
20	CONT IN	Input	Input/output terminal of PWM loop gain setting. Loop gain is set with external mount resistor.
21	GND	-	Earth
22	V OUT	-	Servo signal buffer. Servo gain is set with external mount resistor.
23	V IN+	-	Servo signal buffer. Servo gain is set with external mount resistor.
24	V IN-	-	Servo signal buffer. Servo gain is set with external mount resistor.
25	CL	-	Motor max. current setting terminal. Voltage is applied from outside. $VCL = \text{RNFIML}$ , where VCL: applied voltage, RNF: pin 13 external mount R+50 Mohm, IMF: motor max. current
26	REMOTE	-	Usually connected to Vcc. Circuit operates normally. When it is connected to GND, standby state is set, thereby saving power.
27	DIR	-	Motor rotation direction control terminal. When this pin is connected to GND, motor rotates inversely. Usually it is open.
28	BRAKE	-	Brake terminal. Current flows only to one phase where motor exists

In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

## CIRCUIT DESCRIPTION

## IC401 VHiHA12133M-1 (HA12133M)

Pin No.	Terminal Name	Input/Output	Function
1	RECLVB	-	Resistor connection terminal for Bch, PCM area storage level setting
2	PLTLVB	-	Resistor connection terminal for Bch ATF PILOT area storage level setting
3	AFTOUT	Output	Preamplifier output terminal for AFT servo
4	RFOUT	Output	Preamplifier output terminal
5	EQ1INP	Input	EQ1 amplifier positive side input terminal
6	EQ1INN	Input	EQ1 amplifier negative side input terminal
7	EQ1OTP	Output	EQ1 amplifier output terminal
8	BIASPC1	-	Bias circuit bias capacitor connection terminal
9	AGND	-	Analog GND terminal
10	EQ2INP	Input	EQ2 amplifier positive side input terminal
11	EQ2INN	Input	EQ2 amplifier negative side input terminal
12	EQ2GAIN	-	Resistor connection terminal for EQ2 amplifier gain setting
13	EQ2OUT	Output	EQ2 amplifier output terminal
14	DGND	-	Digital system GND terminal
15	RDATA	Input	Storage data input terminal
16	PLAREA	Input	AFT PILOT area storage level selection signal input terminal. H: AFT PILOT area, L: Other
17	RECPB	Input	Record/playback selection signal input terminal. H: Record, L: Playback
18	SWH	Input	Head selection signal input terminal. H: Bch, L: Ach
19	TEST	-	Test terminal
20	DVcc	-	Digital system power supply terminal
21	PLTLVA	-	Resistor connection terminal for Ach AFT PILOT area storage level setting
22	RECLVA	-	Resistor connection terminal for Ach PCM area storage level setting
23	VCAOTA	Output	Ach REC VCA output terminal
24	RECINA	Input	Ach REC amplifier input terminal
25	PVCCPC	Output	Reference bias output terminal
26	RECOTA	Output	Ach REC amplifier output terminal
27	SNDPCA	-	Ach 2nd amplifier bias capacitor connection terminal
28	SNDINA	Input	Ach 2nd amplifier input terminal
29	FSTOTA	Output	Ach 1st amplifier output terminal
30	RGNDA	-	GND terminal
31	PBSWA	-	Ach 1st amplifier ON/OFF transistor collector terminal
32	FSTINA	Input	Ach 1st amplifier input terminal
33	BIASPC2	-	Bias circuit bias capacitor connection terminal
34	PBCNT	-	1st amplifier ON/OFF transistor base terminal
35	FSTINB	Input	Bch 1st amplifier input terminal
36	PBSWB	-	Bch 1st amplifier ON/OFF transistor collector terminal
37	RGNDB	-	GND terminal
38	FSTOTB	Output	Bch 1st amplifier output terminal
39	SNDINB	Input	Bch 2st amplifier input terminal
40	SNDPCB	-	Bch 2ch amplifier bias capacitor connection terminal
41	RECOTB	Output	Bch REC amplifier input terminal
42	AVcc	-	Analog system power supply terminal
43	RECINB	Input	Ach REC amplifier input terminal
44	VCAOTB	Output	Bch REC VCA output terminal

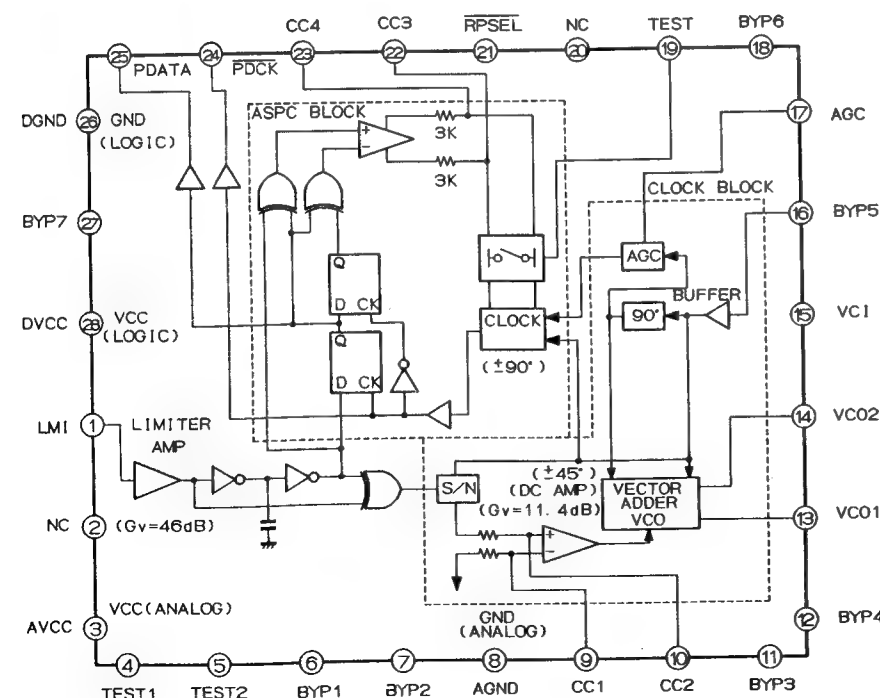
## CIRCUIT DESCRIPTION

IC451 VHiHA12062M-1 (HA12062M)

Pin No.	Terminal Name	Input/Output	Function
1	LMI	Input	Limiter amplifier input terminal
2*	NC	-	Not connected internally.
3	AVcc	-	Analog system power supply
4	TEST1	-	Test terminal
5	TEST2	-	Test terminal
6	BYP1	-	Bias source bias capacitor connection terminal
7	BYP2	-	Limiter amplifier bias capacitor connection terminal
8	AGND	-	Analog system earth
9	CC1	-	DC amplifier bias capacitor connection terminal
10	CC2	-	Loop filter capacitor and resistor connection terminal
11	BYP3	-	Bias source bias capacitor connection terminal
12	BYP4	-	VCO bias capacitor connection terminal
13	VCO1	Output	VCO tank coil connection terminal
14	VCO2	Output	VCO tank coil connection terminal
15	VCI	Input	VCO tank coil (secondary) connection terminal
16	BYP5	-	Bias source bypass capacitor connection terminal
17	AGC	-	AGC detection capacitor connection terminal
18	BYP6	-	AGC bypass capacitor connection terminal
19	TEST3	-	Test terminal
20*	NC	-	Not connected internally
21	RPSEL	Input	Record/Playback selection signal input terminal
22	CC3	-	ASPC loop filter capacitor connection terminal
23	CC4	-	ASPC loop filter capacitor connection terminal
24	PDCK	Output	Clock output terminal
25	PDATA	Output	Playback data output terminal
26	DGND	-	Digital system earth
27	BYP7	-	Bias source bypass capacitor connection terminal
28	DVcc	-	Digital system earth

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

IC451 VHiHA12062M-1 (HA12062M)



## CIRCUIT DESCRIPTION

**IC701 VHiSAA7320/-1 (SAA7320GP)**

Pin No.	Terminal Name	Input/Output	Function
1	CDR	-	R-CH dumping capacitor Input
2	DER	Input	R-CH deemphasis SW input
3	VrefR	-	R-CH reference voltage, +2.5 V with respect to R-CH analog GND
4	VSSAR	-	Analog R-CH GND is connected to earth.
5	VSSA	-	Analog earth
6	VSSAL	-	Analog L-CH GND is connected to earth.
7	VrefL	-	L-CH reference voltage, +2.5V with respect to L-CH analog GND
8	DEL	Input	L-CH deemphasis SW input
9	CDL	-	L-CH dumping capacitor
10	INTL	Output	Integral output. Output to L-CH integration capacitor
11	VDDAL	-	Analog L-CH power supply terminal
12	OALI-	Input	L-CH LPF. Negative operational amplifier input
13	OALI+	Input	L-CH LPF. Positive operational amplifier input
14	OALO	Output	L-CH operational amplifier output
15	VDDref	-	Power +5 V is supplied to reference voltage generator.
16	VRO	Output	Reference voltage output (+2.5V)
17	VRC	-	Capacitor reference voltage
18*	TEST4	Output	Test output 4
19*	DAO	Output	12S serial data (16-bit linear 2-component PCM digital signal 176.4 kHz)
20*	CLO	Output	12S serial bit clock output
21*	WSO	Output	12S word selection
22	VDD1	-	Power supply +5V digital section power supply
23	VDD2	-	Power supply +5V crystal OSC
24*	XTAL2	Output	Crystal OSC output
25	XTAL1 (256FS)	Input	Crystal OSC input
26*	XSYS	Output	System clock output
27, 28	Vss	-	Digital earth
29	TEST1	Input	Test 1 input
30	WS1(LR)	Input	12S word section input
31	CL1(BCK)	Input	12S serial bit clock input, fCL1 = 2.8224 MHz
32	DA1(DATA)	Input	12S serial data input
33*	NC	-	Not connected internally
34	DEC	Input	Deemphasis control
35	MUTE	Input	Muting input. Active: L
36	ATT	Input	Attenuation. Active L: -1.2 dB attenuator
37*	TEST2	Output	Test output 2
38*	TEST3	Output	Test output 3
39	VDDA	-	Power supply terminal. +5V is connected
40	OARD	Output	R-CH operational amplifier output
41	OARI+	Input	R-CH LPF. Negative operational amplifier input
42	OARI-	Input	R-CH LPF. Negative operational amplifier input
43	VDDAR	-	Power supply terminal. +5V is connected.
44	INTR	Output	Integral output. Output to R-CH integral capacitor

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

## CIRCUIT DESCRIPTION

## IC801 RH-IX1837AFZZ (M34200)

Pin No.	Terminal Name	Input/Output	Function
1	SEG0	Output	Display segment
2	REMOCON	Input	Remote control input
3	DK-CLK	Input/Output	System microcomputer data signal
4	REC KEY	Input	Key matrix (return)
5	PAUSE KEY	Input	Key matrix (return)
6	REV KEY	Input	Key matrix (return)
7	FF KEY	Input	Key matrix (return)
8	PLAY KEY	Input	Key matrix (return)
9	STOP/EJECT KEY	Input	Key matrix (return)
10*	NC	-	Not connected internally
11*	NC	-	Not connected internally
12	DK-CHG	Input/Output	System microcomputer data signal
13	DK-STB	Input/Output	System microcomputer data signal
14	DPD7	Input/Output	System microcomputer data signal
15	DPD6	Input/Output	System microcomputer data signal
16	DPD5	Input/Output	System microcomputer data signal
17	DPD4	Input/Output	System microcomputer data signal
18	DPD3	Input/Output	System microcomputer data signal
19	DPD2	Input/Output	System microcomputer data signal
20	DPD1	Input/Output	System microcomputer data signal
21	DPD0	Input/Output	System microcomputer data signal
22	NC	-	Not connected internally
23*	NC	-	Not connected internally
24	XIN	-	Crystal oscillator
25	XOUT	-	Crystal oscillator
26	GND	-	Earth
27	5V	-	Power supply
28*	NC	-	Not connected internally
29	RESET	Input	Microcomputer reset

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

Pin No.	Terminal Name	Input/Output	Function
30	GND	-	Earth
31	A GND	-	Earth
32	A5V	-	Power supply
33	5V	-	Power supply
34	HOLD KEY	Input	Hold key input
35	W-REMOCON	Input	Remote control input
36*	NC	-	Not connected internally
37	SEG21	Output	Display segment
38	SEG20	Output	Display segment
39	SEG19	Output	Display segment
40	SEG18	Output	Display segment
41	SEG17	Output	Display segment
42	SEG16	Output	Display segment
43	SEG15	Output	Display segment
44	SEG14	Output	Display segment
45	SEG13	Output	Display segment
46	SEG12	Output	Display segment
47	SEG11	Output	Display segment
48	SEG10	Output	Display segment
49	SEG9	Output	Display segment
50	SEG8	Output	Display segment
51*	NC	-	Not connected internally
52	COM2	-	Display segment common terminal
53	COM1	-	Displays segment common terminal
54	COM0	-	Display segment common terminal
55	VLC1	Input	Key matrix (strobe)
56	VLC2	Output	Key matrix (strobe)
57	VLC3	Output	Key matrix (strobe)
58	SEG7	Output	Display segment
59	SEG6	Output	Display segment
60	SEG5	Output	Display segment
61	SEG4	Output	Display segment
62	SEG3	Output	Display segment
63	SEG2	Output	Display segment
64	SEG1	Output	Display segment

## CIRCUIT DESCRIPTION

## IC802 RH-IX1838AFFZZ (HD6475328F)

Pin No.	Terminal Name	Input/Output	Function
1 to 4	NC	-	Not connected internally
5	VCC	Input	Power supply
6 to 8	MD0 to MD2	-	Not used. Connected to +5V
9	STBY	-	Not used. Connected to +5V.
10	RESET	Input	Reset input
11	NC	-	Not connected internally
12	VSS	-	Power supply earth
13 to 20	DPD0 to DPD7	Output	Display microcomputer data bus
21	DK-CLK	Input/Output	Serial clock
22	DK-STB	Input/Output	Display microcomputer data (serial)
23	DK-CHG	Input/Output	Display microcomputer data
24	NC	-	Not connected internally
25	MUTE-OUT	Output	Mute control output
26	P-OUT	Output	Power supply control output
27, 28	NC	-	Not connected internally
29	GND	-	Power supply earth
30	HSW	Output	Head selection signal
31	NC	-	Not connected internally
32	DRMSYNC	Input	Drum motor sync signal
33	PLL	Input	ID parity check signal
34	ENV	Input	Envelope signal
35 to 37	NC	-	Not connected internally
38	CMND	Output	LSI data bus
39	RQTCK	Output	LSI data bus
40, 41	NC	-	Not connected internally
42	5V	Input	Power supply 5 V
43 to 50	PD0 to PD7	Input/Output	LSI data bus (microcomputer interface)
51	GND (AVSS)	-	Earth
52	EOT	Input	EOT sensor input
53	BOT	Input	BOT sensor input
54	CST-IN	Input	Cassette SW input
55	DEW	Input	Dew sensor input (AD input)
56	MUTE-IN	Input	Mute control input
57	NC	-	Not connected internally
58	MODE1	-	Earth
59	MODE2	-	Earth
60	5V (AVCC)	-	Power supply 5V
61	P-IN	Input	Power control input
62	BAT-DET	Input	Battery reduction voltage detection
63	48k/44k	Input	Sampling frequency 48 kHz/44 kHz selection input
64	DFLG	Input	Digital muting input
65	NC	-	Not connected internally
66*	GDATA	-	Not used
67	NC	-	Not connected internally
68*	GCLK	-	Not used
69	EXTAL	-	Oscillator is connected.
70	XTAL	-	Oscillator is connected.
71	GND	-	Earth
72, 73	NC	-	Not connected internally
74*	CE1	-	Not used
75*	CE2	-	Not used
76, 77	NC	-	Not connected internally
78	CAP-FG	Input	Capstan motor FG signal input
79, 80	NC	-	Not connected internally

In this unit, the terminal with asterisk mark (\*) is (open) terminal which is not connected to the outside.

CIRCUIT DESCRIPTION

IC401 VHIHA12133M-1(HA12133M)

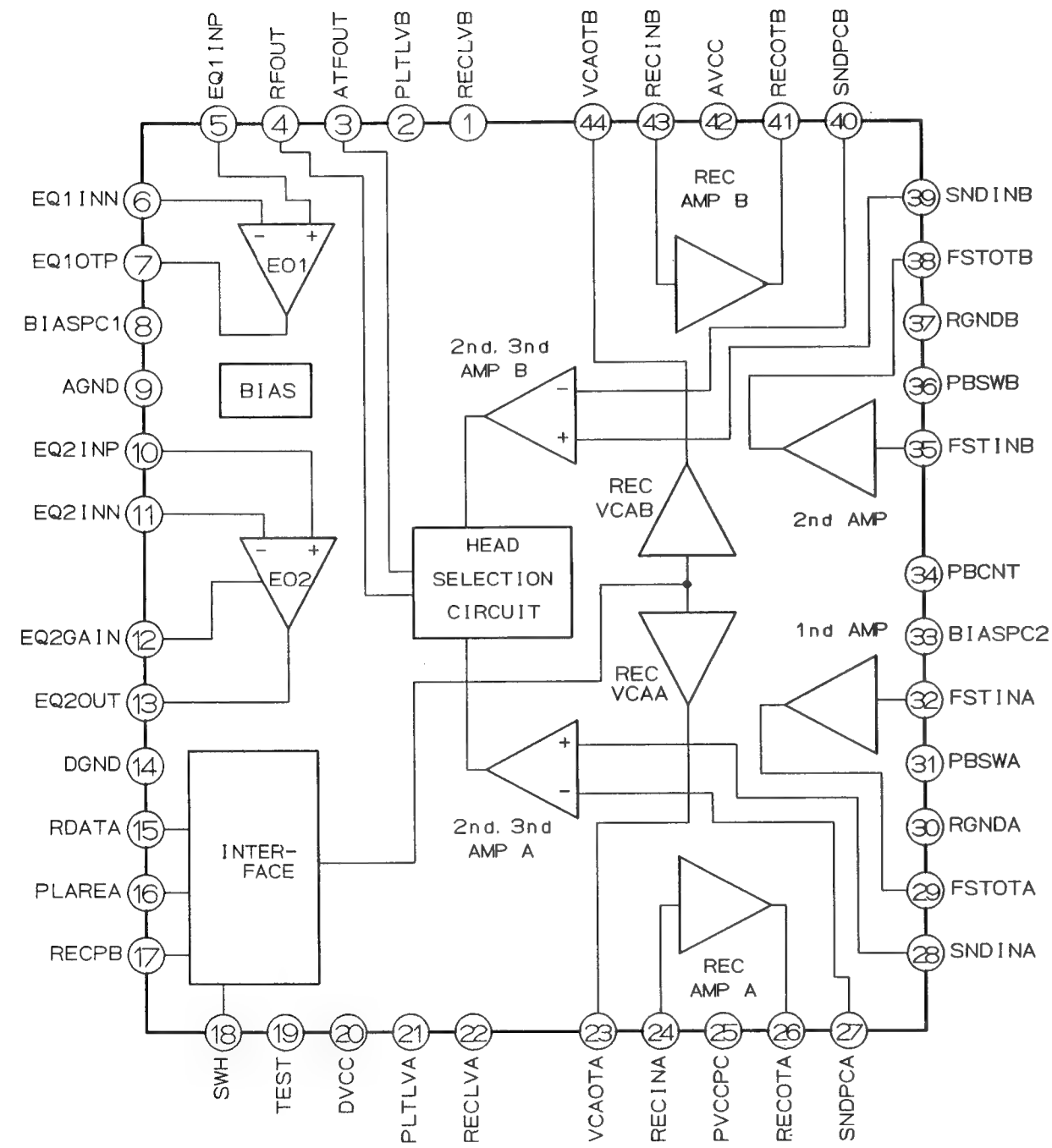
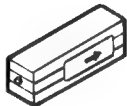
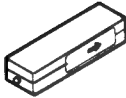


Photo is BP-A7.

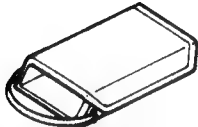
Accessories



Rechargeable battery (3)  
(SH1189320006)



Rechargeable battery (2)  
(SH1189320005)

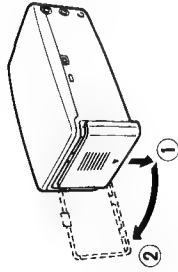


Carrying case  
(W01-0369-08)

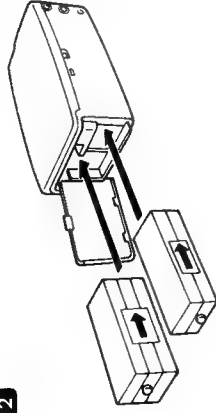


## How to recharge the battery

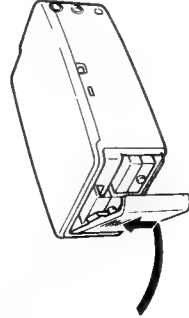
- 1 **Open the battery cover.**
  - Slide the cover downward then flap open.



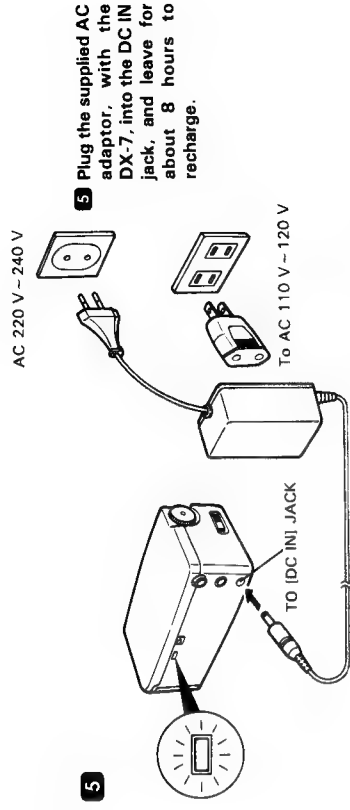
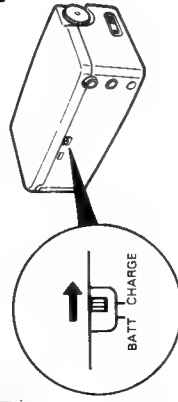
- 2 **Insert two rechargeable battery packs.**
  - Insert each battery pack in the direction of the arrow indicated on it.
  - If one or both of the battery packs are inserted in the opposite direction, normal recharging will not occur even when the charging indicator is lighted.
  - Be careful not to touch the battery terminals with your hand.



- 3 **Close the battery cover.**
  - Close by pushing the battery packs with the battery cover.



- 4 **Set the BATT/CHARGE switch to CHARGE.**



- The charging indicator lights up during charging. (The indicator lamp does not go off even after the end of recharging.)
- The rechargeable battery packs can repeat about 300 times of recharging and discharging cycles.
- When the battery packs are nearly exhausted, the digital audio tape recorder (DX-7) stops with "LO" displayed on the program number display.
- After the discharged condition, about 8 hours of recharging makes it possible to play the DX-7 for about 1.5 hours. (Considering the property of the rechargeable battery, it is recommended to start recharging after "LO" has started to be displayed.)
- The playable time reduces if a microphone or analog audio cord is connected to the MIC/LINE IN jack.
- If the charging indicator will not light up, remove the battery packs and try insertion again.

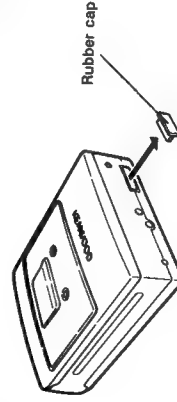
### Notes

- Be sure to use the supplied AC adaptor as standard with the digital audio tape recorder (DX-7).
- The battery packs may generate slight heat during recharging; this is not malfunction.
- Do not recharge the battery packs for more than 16 hours; for this will shorten their service lives.
- The rechargeable battery packs discharge electricity even when they are left unused.
- Be careful that the rechargeable battery packs do not come in contact with a metallic object.
- When the battery packs are charged for the first time or after a long unused period, the operating time may be shorter than in normal use. In this case, normal operating time can be restored after repeating several discharging/recharging cycles.
- Should the operating time shortens even after correct recharging, replace both of the two rechargeable battery packs (optional, handled as service parts).

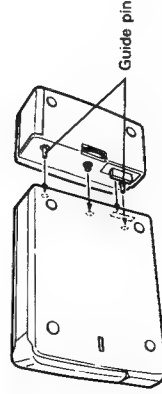
## Installation on the digital audio tape recorder (DX-7)

Before proceeding to the following, be sure to set the POWER switch of the DX-7 digital audio tape recorder to OFF.

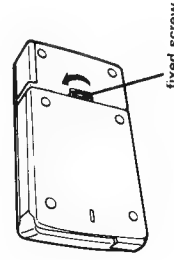
- 1 **Remove the rubber cap from the rear of the DX-7.**



- 2 **Align the guide pin on the A/D converter unit with the guide hole on the DX-7 digital audio tape recorder, and fit them by pushing in the horizontal direction.**
  - Do not push in the oblique direction, or the connection terminals may be damaged.
  - Do not touch or stain the connection terminals of the DX-7 digital audio tape recorder and A/D converter unit.
  - When the A/D converter unit is not connected, attach the rubber cap.

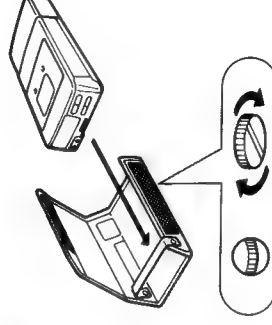


- 3 **Tighten the securing screw on the A/D converter unit by turning it toward LOCK.**

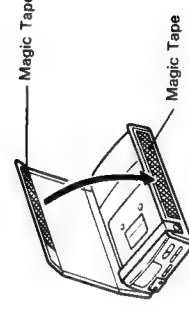


## Accommodation in the carrying case

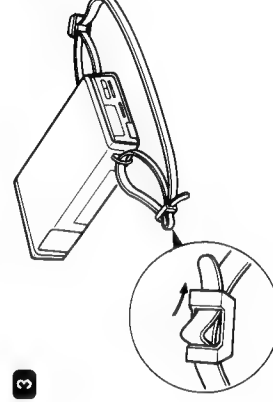
- 1 **Set the DX-7 digital audio tape recorder in the carrying case.**
  - Hook up the holding belt, and pass the DX-7 under the holding belt.
  - Adjust the position of the DX-7 so that the securing screw on the A/D converter unit is exposed through the hole on the carrying case.
  - Using a coin, etc., turn the securing screw on the bottom of the carrying case to secure the DX-7 and carrying case.



- 2 **Close the carrying case flap by aligning the two Magic Tape pieces.**



- 3 **Attach the strap on the carrying case.**



DISASSEMBLY FOR REPAIR

BLOCK DIAGRAM

A/D Converter Unit

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top cabinet	1. Screw ..... (A1) x 4	24-1
2	PWB unit(*1)	1. Screw ..... (B1) x 2 2. Remove the flexible PWB. .... (B2) x 1 3. Disconnect the black and red lead wires. .... (B3) x 2 4. Remove the solder joint. (*2) ..... (B4) x 1	24-2 24-1
3	AD PWB	1. Screw ..... (C1) x 6 2. Remove the solder joint. .... (C2) x 3	24-3

\*1 When removing the PWB unit from the cabinet, remove the blind cover with a slotted screwdriver as shown in Fig. 24-1, release the mic. knob lock, remove the mic. knob, and then remove the PWB unit.

\*2 When assembling, solder the hinge (positive battery terminal). Unless it is soldered, power cannot be supplied.

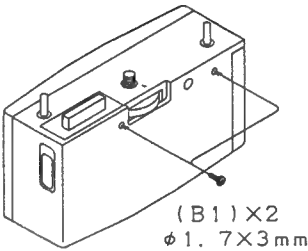


Figure 24-2

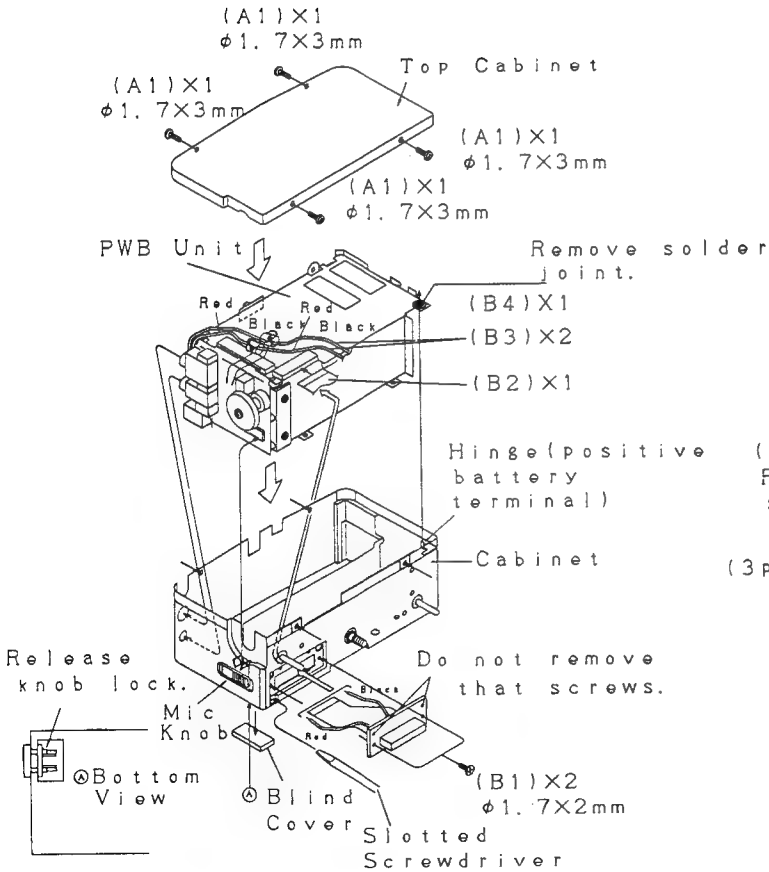


Figure 24-1

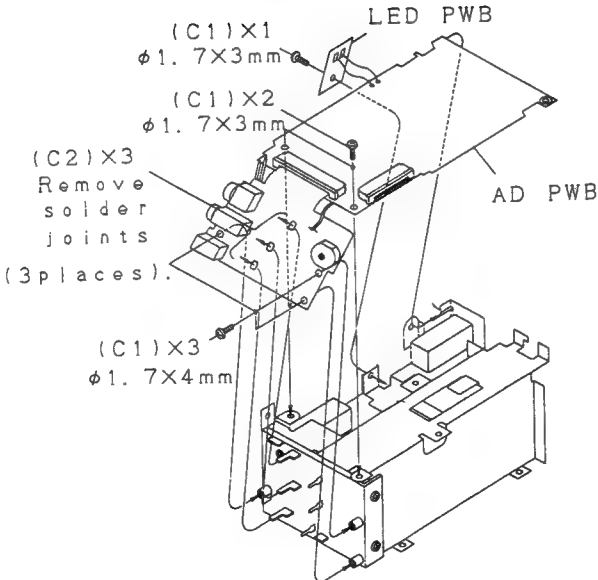


Figure 24-3

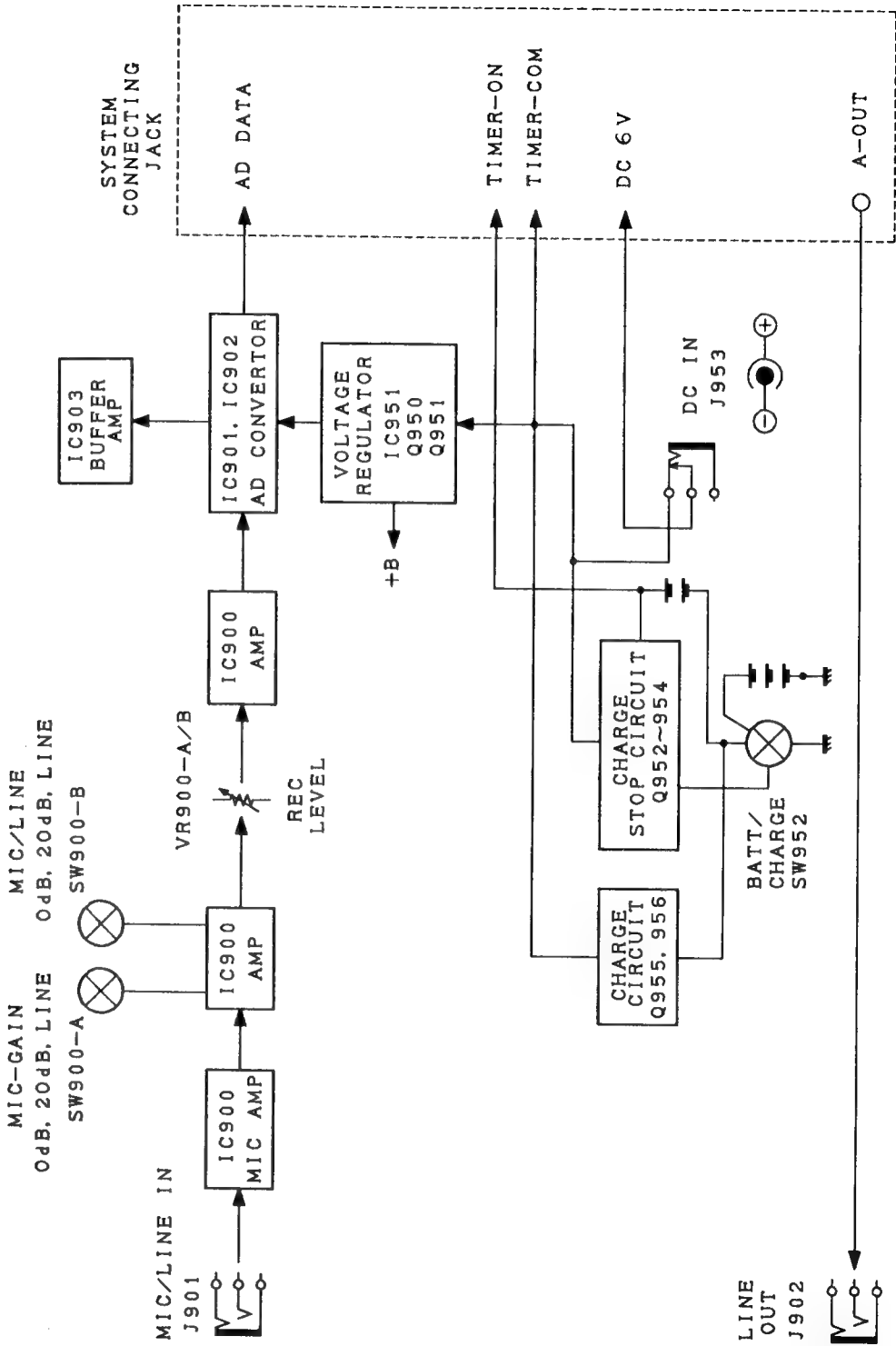


Figure 19 BLOCK DIAGRAM(A/D CONVERTER)

ADJUSTMENT

Preparation for AdjustmentFor adjustment prepare the following instrument and DAT tape.

- Blank tape
- DC power supply (5.8 V) or AC adapter for DX-7
- 100 MHz oscilloscope

Switch setting	
Switch	Setting position
REC LEVEL	max (10)
BATT/CHARGE	BATT
MIC/LINE	LINE

A/D converter power supply voltage (AVcc) checking

Check the voltage of pin 24 of IC901 and 902.

Specified value	5.1 V $\pm$ 0.2 V
-----------------	-------------------

Analog ground (AG) voltage adjustment

Make an adjustment so as to obtain voltage equal to 1/2 of AD converter power supply voltage (AVcc).

Adjusting Point	Specified value	Instrument Connection
VR905	$AV_{cc}/2 \pm 0.01\text{ V}$	Pin 23 of IC901 Pin 26 of IC901
VR904	$AV_{cc}/2 \pm 0.01\text{ V}$	Pin 23 of IC902 Pin 26 of IC902

Amplifier bias voltage adjustment

Make an adjustment to obtain voltage equal to 1/2 of AD converter power supply voltage (AVcc).

Adjusting Point	Specified value	Instrument Connection
VR903	$AV_{cc}/2 \pm 0.01\text{ V}$	Pin 28 of IC901 Pin 26 of IC901
VR902	$AV_{cc}/2 \pm 0.01\text{ V}$	Pin 28 of IC902 Pin 26 of IC902

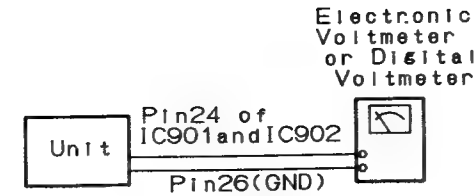


Figure 38-1 A/D CONVERTER POWER SUPPLY VOLTAGE (AVcc)

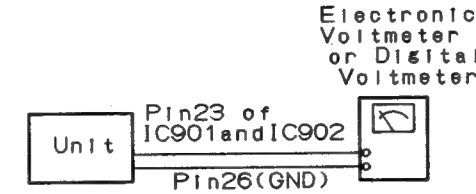


Figure 38-2 ANALOG GROUND (AG) VOLTAGE

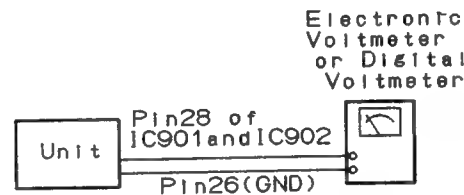
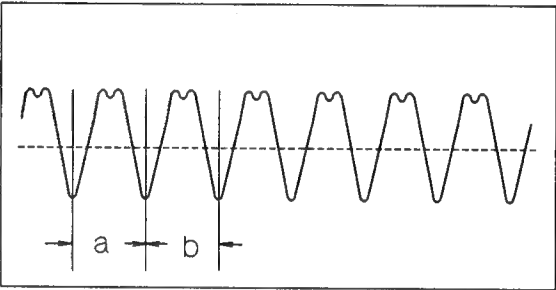
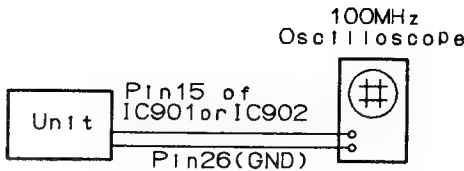


Figure 38-3 AMPLIFIER BIAS VOLTAGE

Clock adjustment

Adjusting Point	Adjusting method	Instrument Connection
VR906	Equalize the intervals of two cycles as shown in Fig. 39-1.	Pin 15 of IC901 or IC902 and pin 26 (GND)

- Note:**
1. Use 100 MHz oscilloscope.
  2. When more than 5 minutes elapse, power is automatically turned off. At this time set once the POWER switch of DX-7 (unit) to OFF, and set it again to ON.



Make an adjustment so as to equalize a:b

Figure 39-1 CLOCK

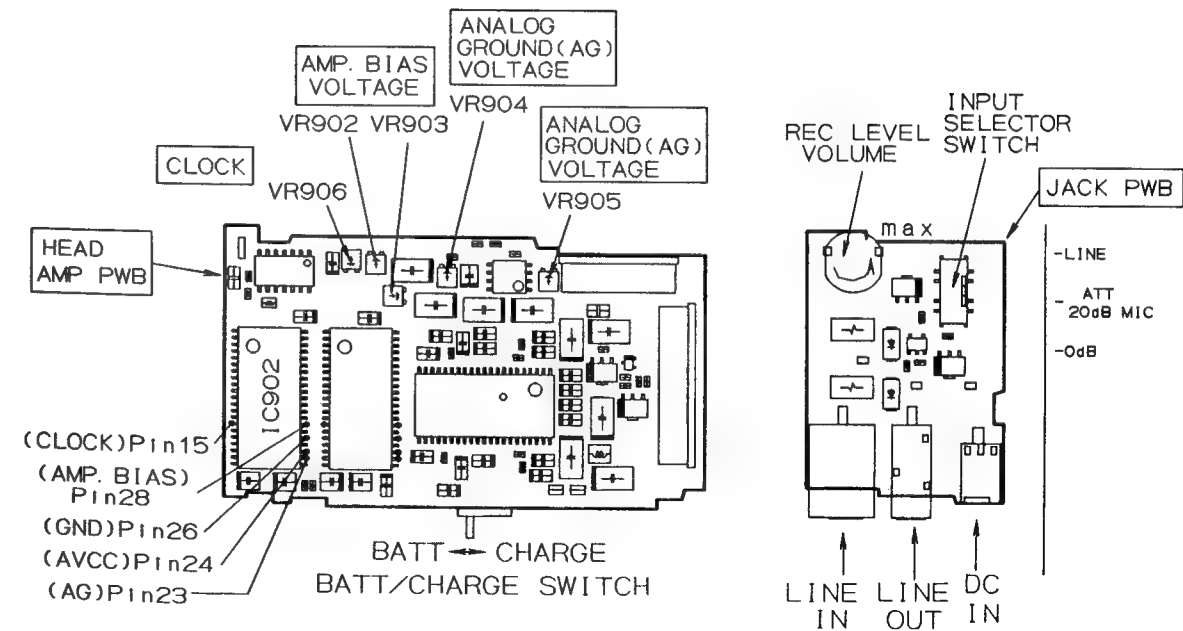


Figure 39-2 ADJUSTING POINTS

ADJUSTMENT

CIRCUIT DESCRIPTION

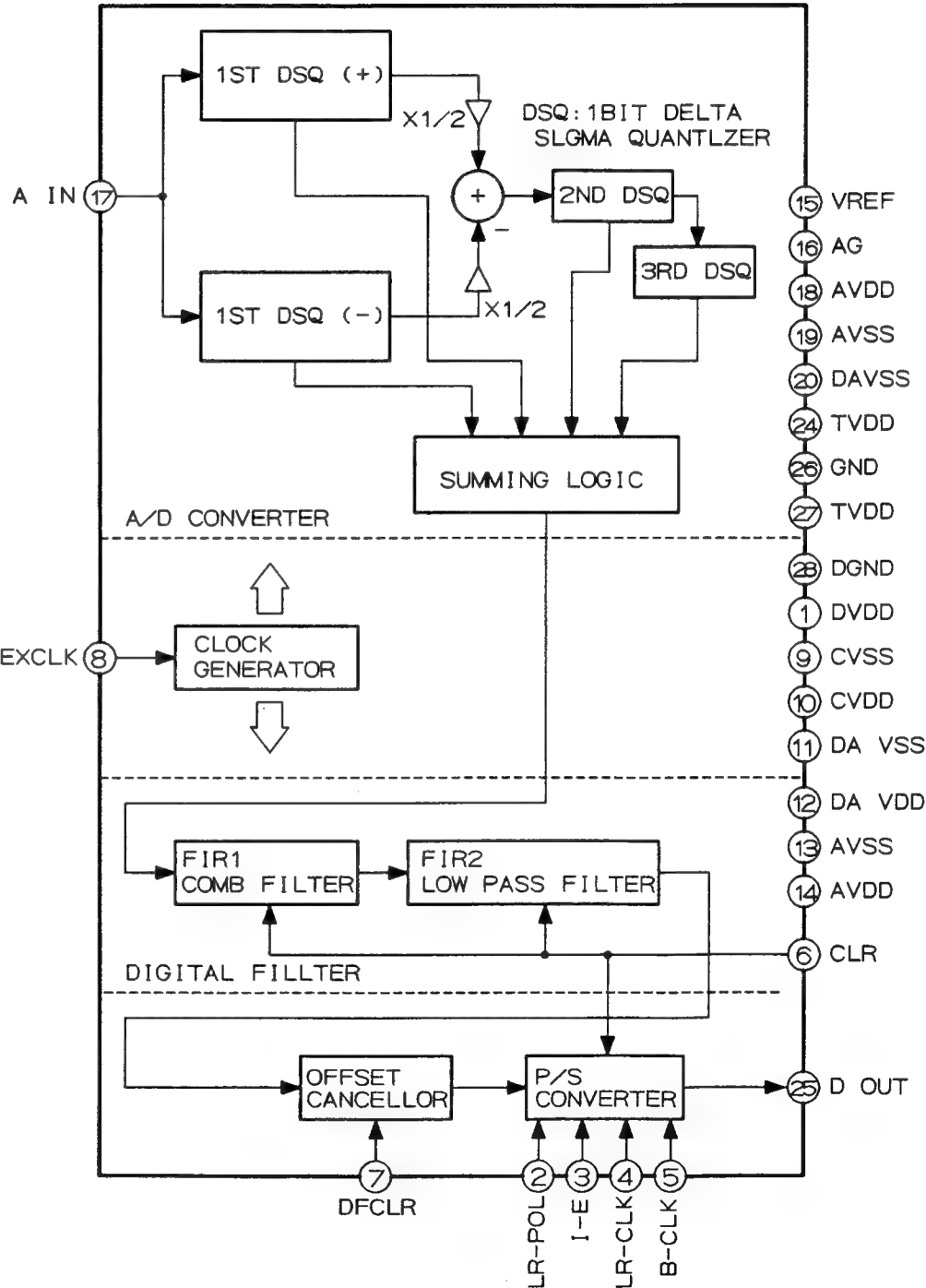
IC901, 902 VHiMN86081/-1 (MN86081)

Pin No.	Terminal Name	Function
1	Dvdd	Digital system power terminal
2	LR-POL	L-ch/R-ch selection terminal (H: R-ch)(L: L-ch)
3	I-E	L: Signal processing LSI format. H: I2S format
4	LR-CLK	LRCLK input terminal, pin 2 (LR-POL); H state: This terminal is in H state, and R-ch data is outputted from the pin 25 (Dout). When this terminal is in L state, the pin 25 (Dout) becomes high impedance state. Pin 2 (LR-POL); L state: This terminal becomes L state, and L-ch data is outputted from the pin 25 (Dout). When this terminal becomes H state, the pin 25 (Dout) becomes high impedance state.
5	B-CLK	Bit transfer command input (bit transfer at fall)
6	CLR	Clear terminal
7	DFCLR	L: Offset clear terminal
8	EXCLK	512 fs input terminal
9	CVss	Digital system ground terminal
10	CVdd	Digital system power terminal (+5V)
11	DAVss	Digital system ground terminal
12	DAVdd	Digital system power terminal (+5 V)
13	AVss	Analog system ground terminal
14	AVdd	Analog system power terminal (+5 V)
15	Vref	Analog section reference voltage input terminal (+1.5V)
16	AG	Analog ground input terminal (+2.5V)
17	A IN	Analog input terminal
18	A VDD	Analog system power terminal (+5V)
19	AVss	Analog system ground terminal
20	DA Vss	Digital system ground terminal
21	AMPBIAS	Bias voltage adjusting terminal or operational amplifier (usually its potential is kept equal to that of AC terminal)
22*	NC	Not connected internally
23	Nsub	Connect to AVdd
24	TVdd	Digital system power terminal (+5V)
25	Dout	Serial output terminal
26	GND	Connect to GND
27	TVDD	Digital system power terminal (+5V)
28	D GND	Digital system GND connection terminal

In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

CIRCUIT DESCRIPTION

IC901,902 VHiMN86081/-1(MN86081)



CIRCUIT DESCRIPTION

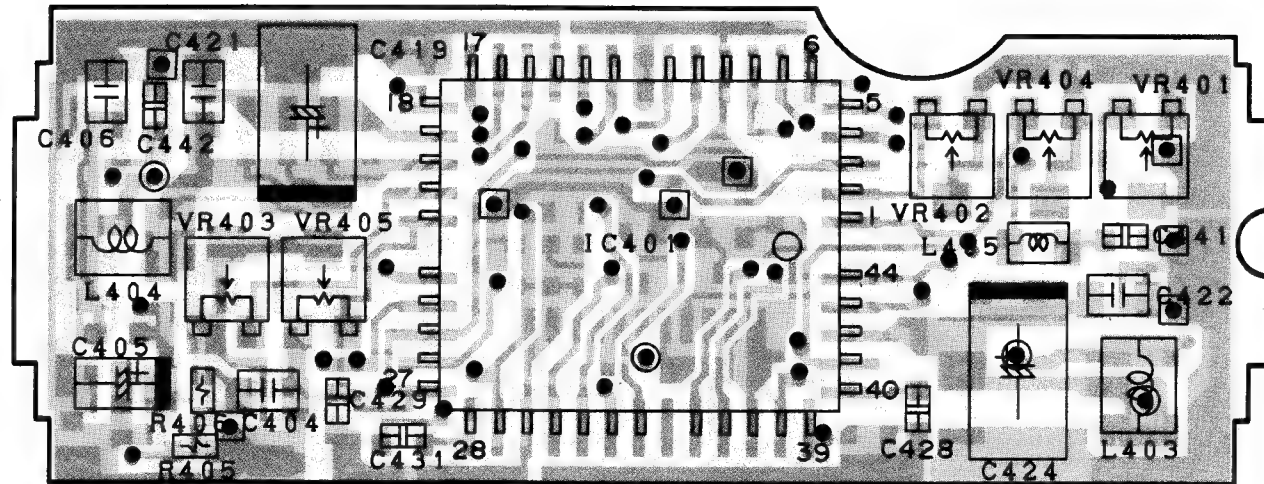
IC900 VHiAN7032S/-1 (AN7032S)

Pin No.	Function
1*	Not connected internally
2	Connect to GND
3	Reference voltage terminal
4	A-ch reference voltage terminal
5	A-ch microphone amplifier noninverting input terminal
6*	A-ch microphone amplifier (L) inverting input terminal
7	A-ch microphone amplifier (H) inverting input terminal
8	A-ch line amplifier noninverting input terminal
9	A-ch microphone and line amplifier output terminal
10	A-ch gain switching amplifier noninverting input terminal
11	A-ch gain switching amplifier inverting input terminal
12	A-ch gain switching amplifier output terminal
13	A-ch buffer amplifier noninverting input terminal
14	A-ch AGC amplifier noninverting input terminal
15	A-ch AGC amplifier output terminal
16	A-ch LPF amplifier inverting input terminal
17	A-ch LPF amplifier output terminal
18*	Not connected internally
19*	Not connected internally
20	AGC time constant setting terminal
21*	Not connected internally
22	Connect to GND
23	REC/PB switching input terminal
24	AGC ON/OFF switching signal input terminal
25*	SG MUTE signal output terminal
26	B-ch PF amplifier output terminal
27	B-ch LPF amplifier inverting input terminal
28	B-ch AGC switching amplifier output terminal
29	B-ch AGC amplifier noninverting input terminal
30	B-ch buffer amplifier noninverting input terminal
31	B-ch gain switching amplifier output terminal
32	B-ch gain switching amplifier inverting input terminal
33	B-ch gain switching amplifier noninverting input terminal
34	B-ch microphone and line amplifier output terminal
35	B-ch line amplifier noninverting input terminal
36	B-ch microphone amplifier (H) inverting input terminal
37*	B-ch microphone amplifier (L) inverting input terminal
38	B-ch microphone amplifier noninverting input terminal
39	B-ch reference voltage terminal
40	LINE/MIC switching signal input terminal
41	MIC/GAIN H/L switching signal input terminal
42	Power input terminal (Vcc)

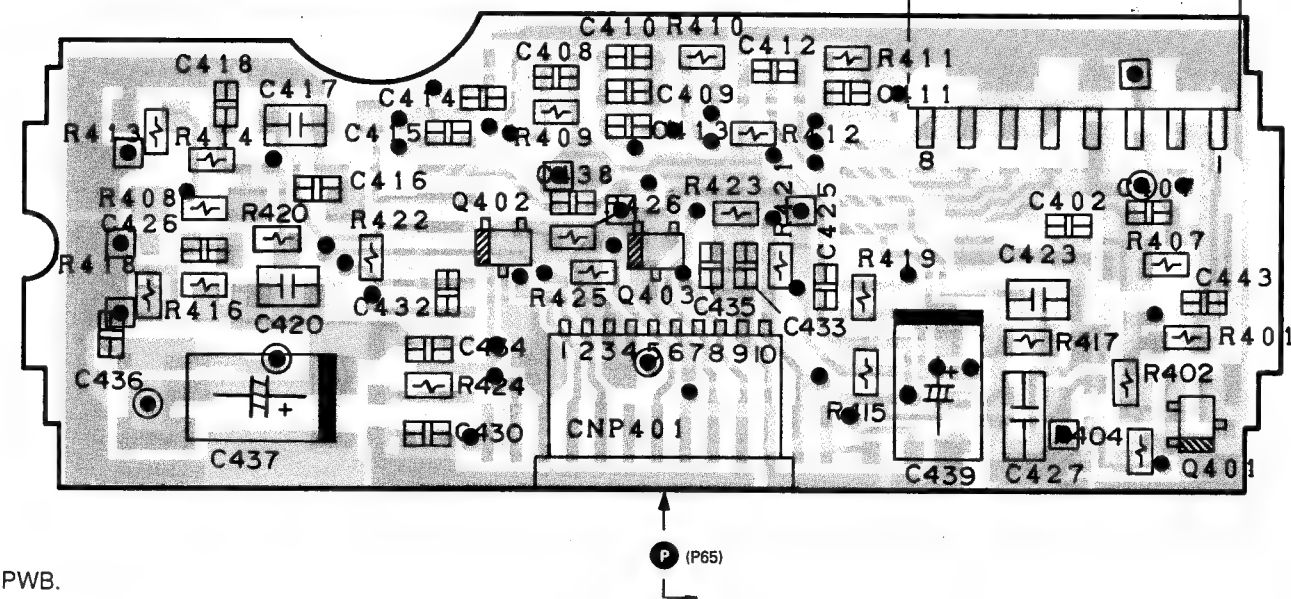
In this unit, the terminal with asterisked mark (\*) is (open) terminal which is not connected to the outside.

MAIN UNIT

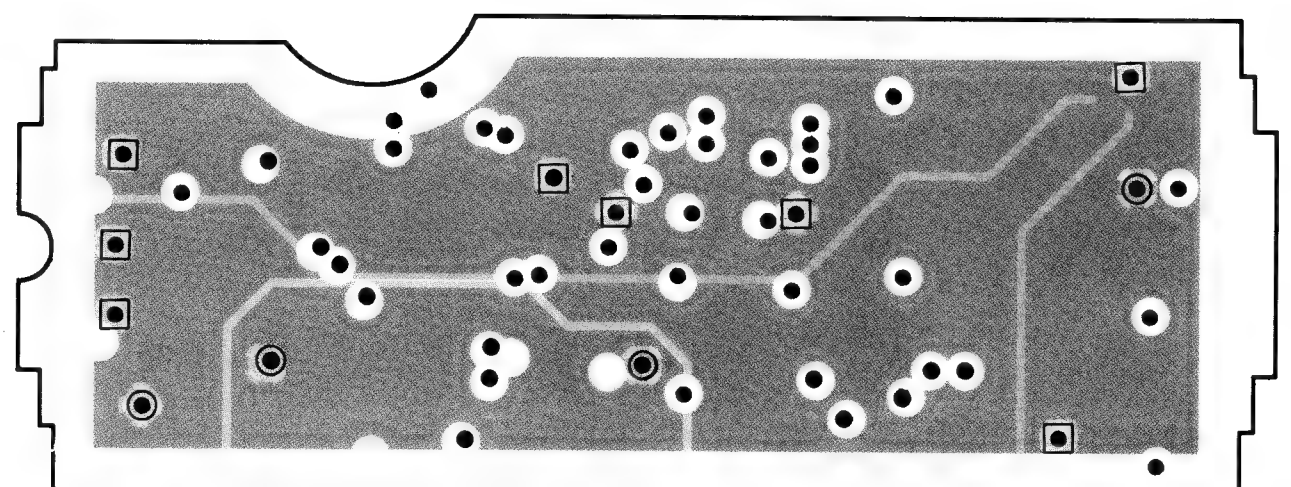
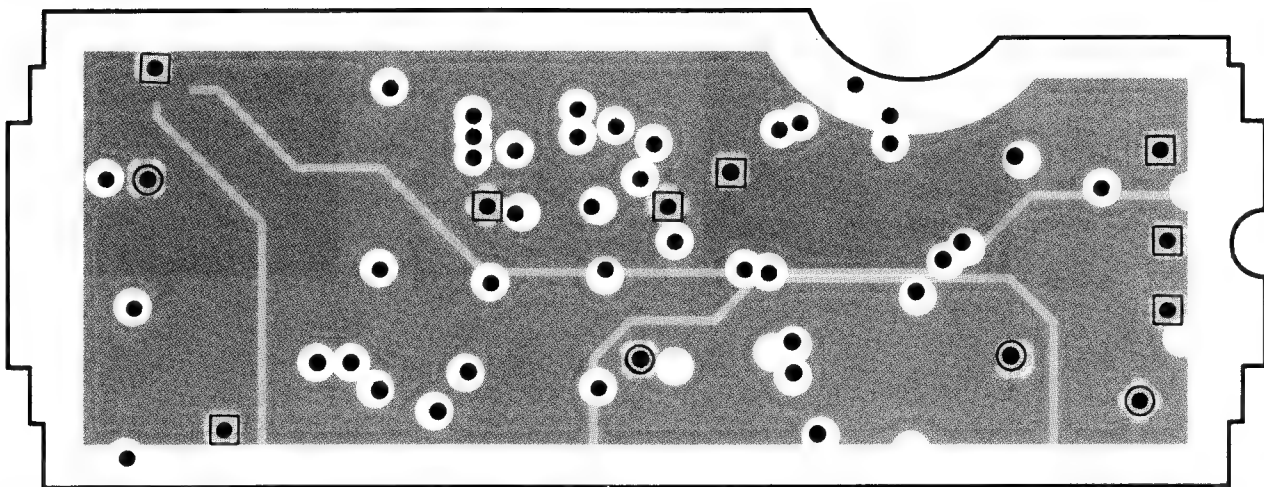
HEAD AMP PWB-C (TOP)



HEAD AMP PWB-C (BOTTOM)



● : Top side of PWB.  
 ○ : Bottom side of PWB.



● : Second layer pattern in the PWB.  
 ○ : Third layer pattern in the PWB.

- : Thru-hole where the top and bottom side patterns are connected.
- : Thru-hole where the +B lines are connected.
- : Thru-hole where the earth lines are connected.

Refer to the schematic diagram for the values of resistors and capacitors.







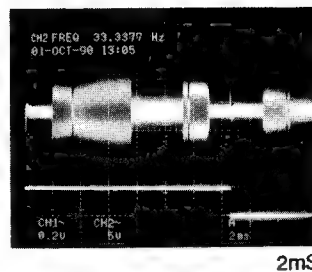


# SIGNAL WAVEFORM

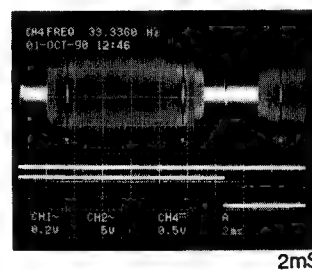
Use 10:1 probe.

Playback mode

- ① 0.2Vdiv
- ② 5Vdiv

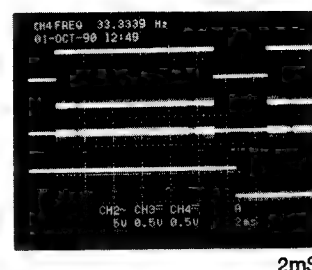


- ① 0.2Vdiv
- ③ 5Vdiv
- ② 0.5Vdiv

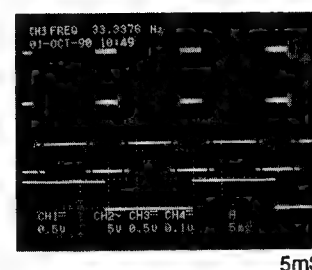


Record mode

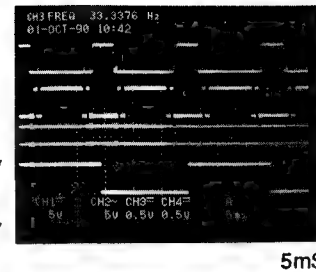
- ④ 5Vdiv
- ⑤ 0.3Vdiv
- ② 0.5Vdiv



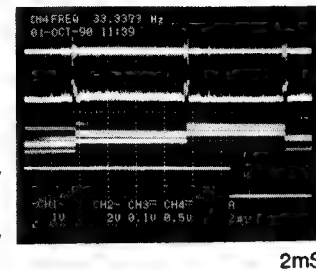
- ① 0.5Vdiv
- ⑥ 5Vdiv
- ⑦ 0.5Vdiv
- ② 0.1Vdiv



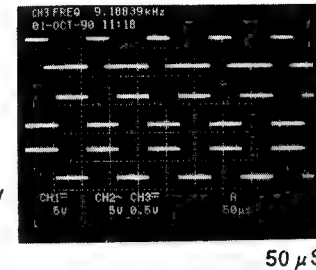
- ⑧ 5Vdiv
- ⑦ 5Vdiv
- ⑨ 0.5Vdiv
- ② 0.5Vdiv



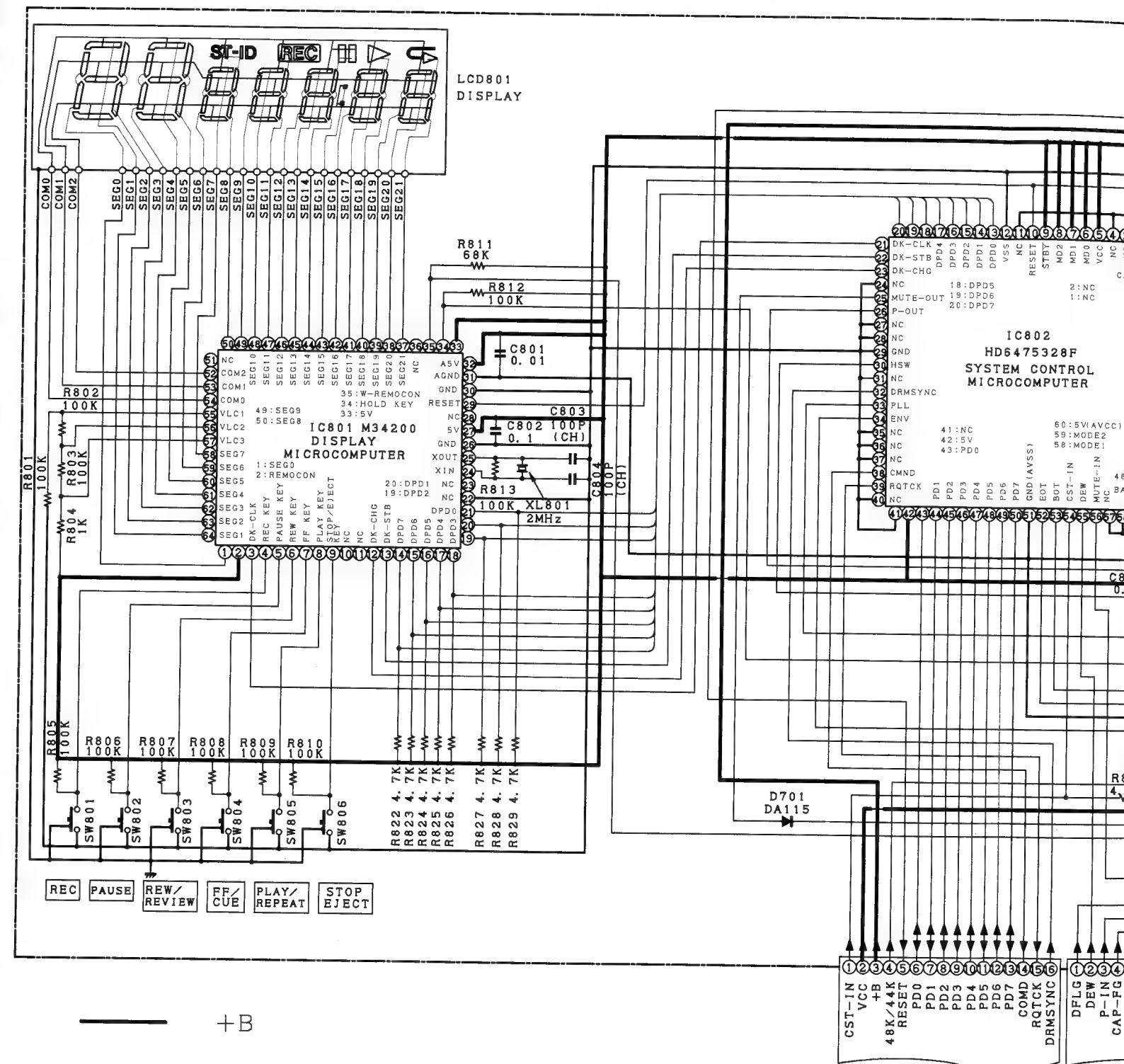
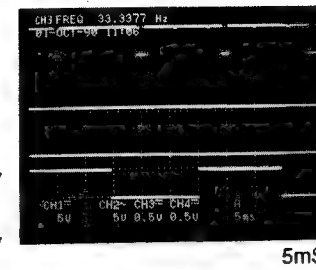
- ⑩ 1Vdiv
- ⑪ 2Vdiv
- ⑫ 0.1Vdiv
- ② 0.5Vdiv



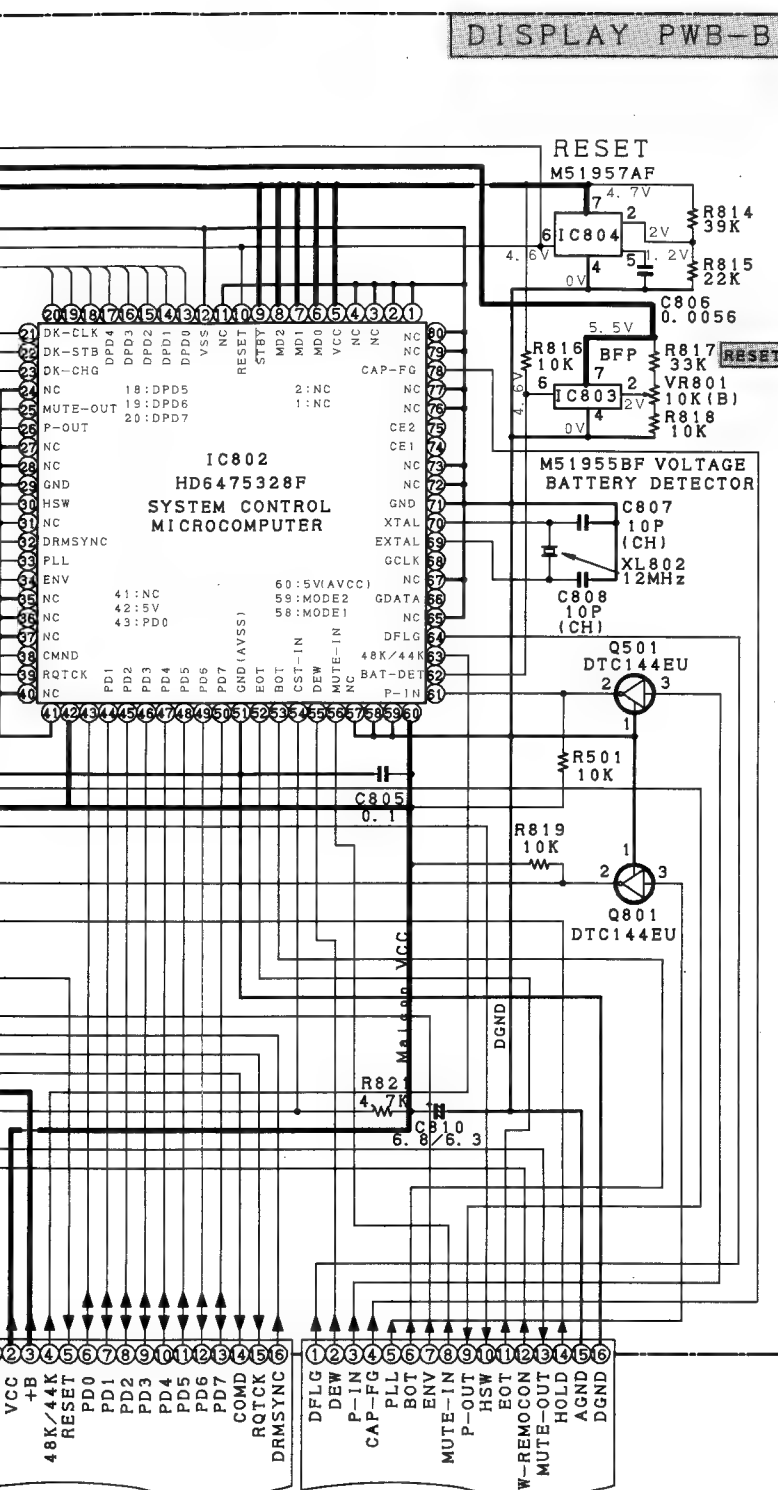
- ⑮ 5Vdiv
- ⑭ 5Vdiv
- ⑬ 0.5Vdiv



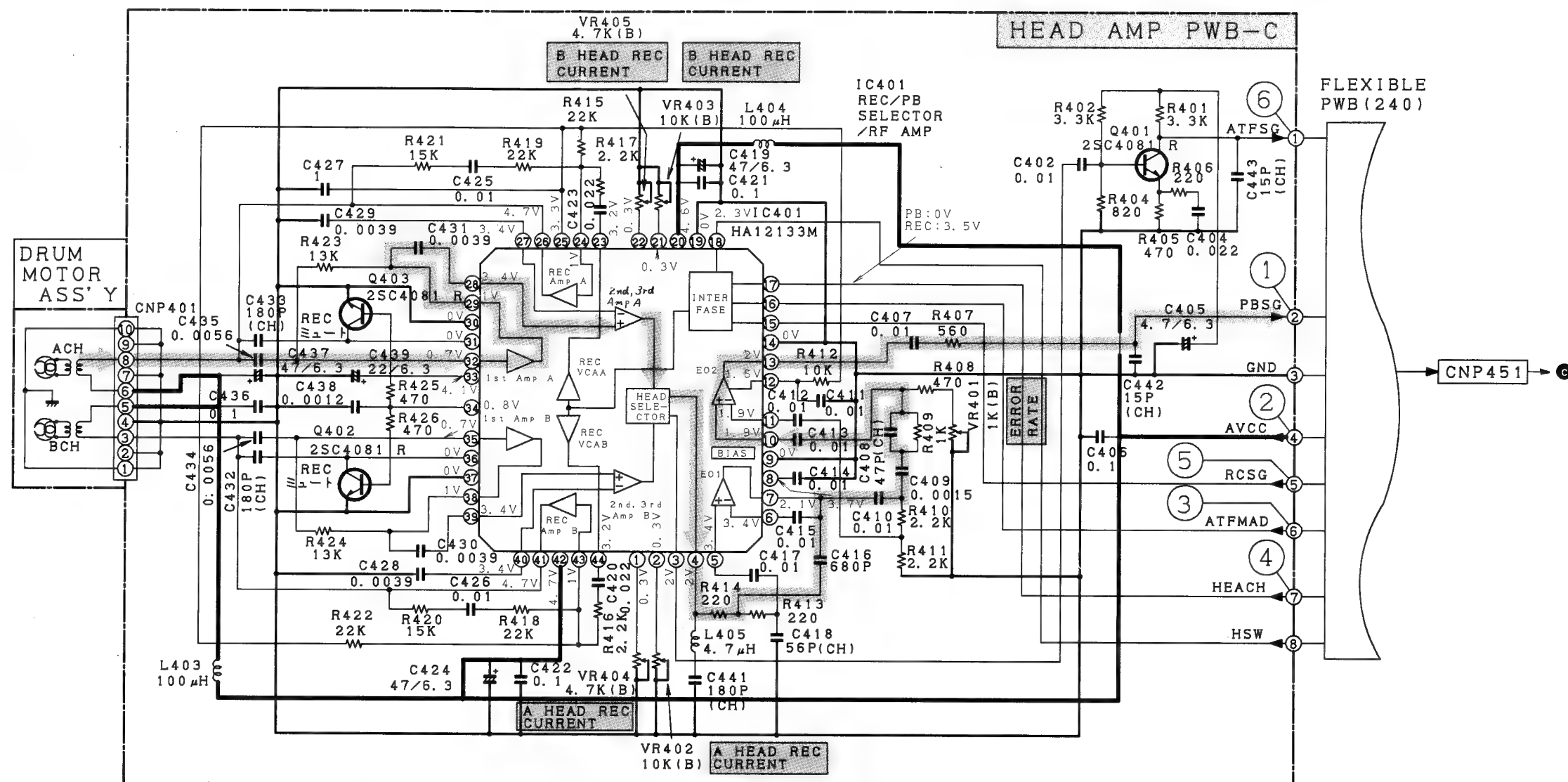
- ⑮ 5Vdiv
- ⑭ 5Vdiv
- ⑬ 0.5Vdiv
- ② 0.5Vdiv



- NOTES ON SCHEMATIC DIAGRAM can be found on page 83.
- The numbers ① to ⑥ are waveform number shown in page 68.



MAIN UNIT



+B Playback Signal

DTA114EU DTC114YU  
DTA114YU DTC143TU  
DTA144EU DTC144EU

FMC1  
FMG2

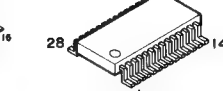
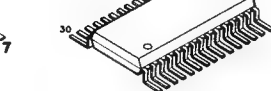
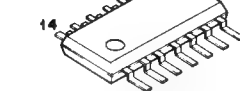
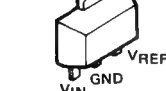
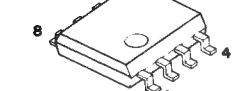
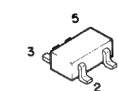
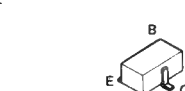
NJM2904M

M5236ML

BU4066BF

CX20036

MB84256

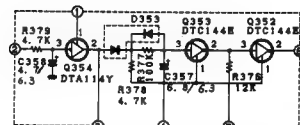
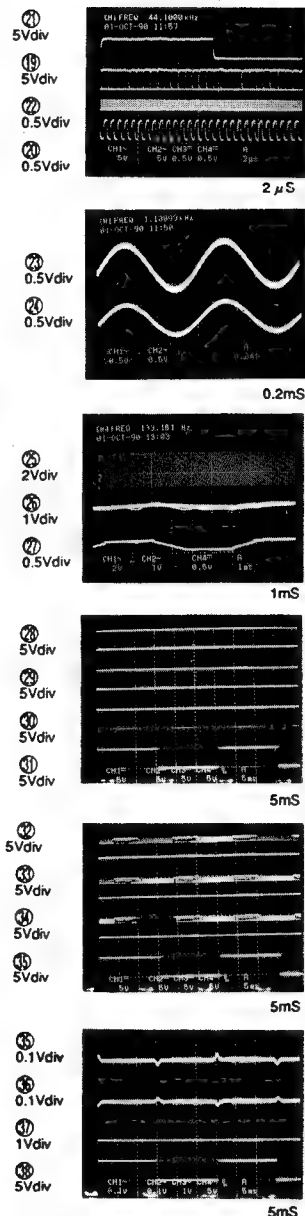


• The numbers ① to ⑥ are waveform number shown in page 62.

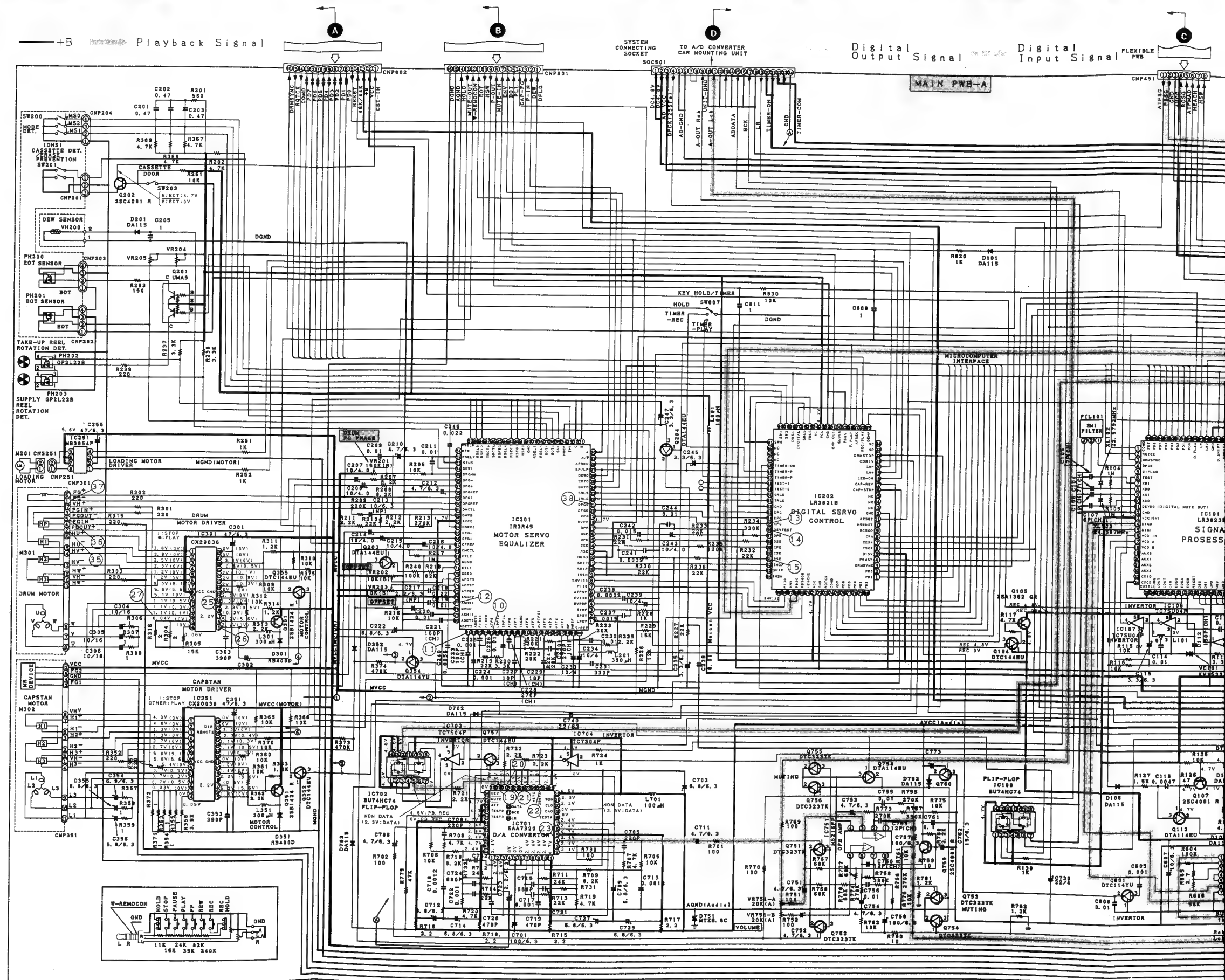
**CAUTION :** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\Delta$  Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.



# MAIN UNIT



- \* 1: This circuit version depends upon which version of IC802 is used for the display PWB-B.
- 1) This circuit is used up through version H (a label marked "H" is attached).
- 2) This circuit is not used from version I on (a label marked "I" is attached).
- 3) For IC802, an improved part will be supplied.



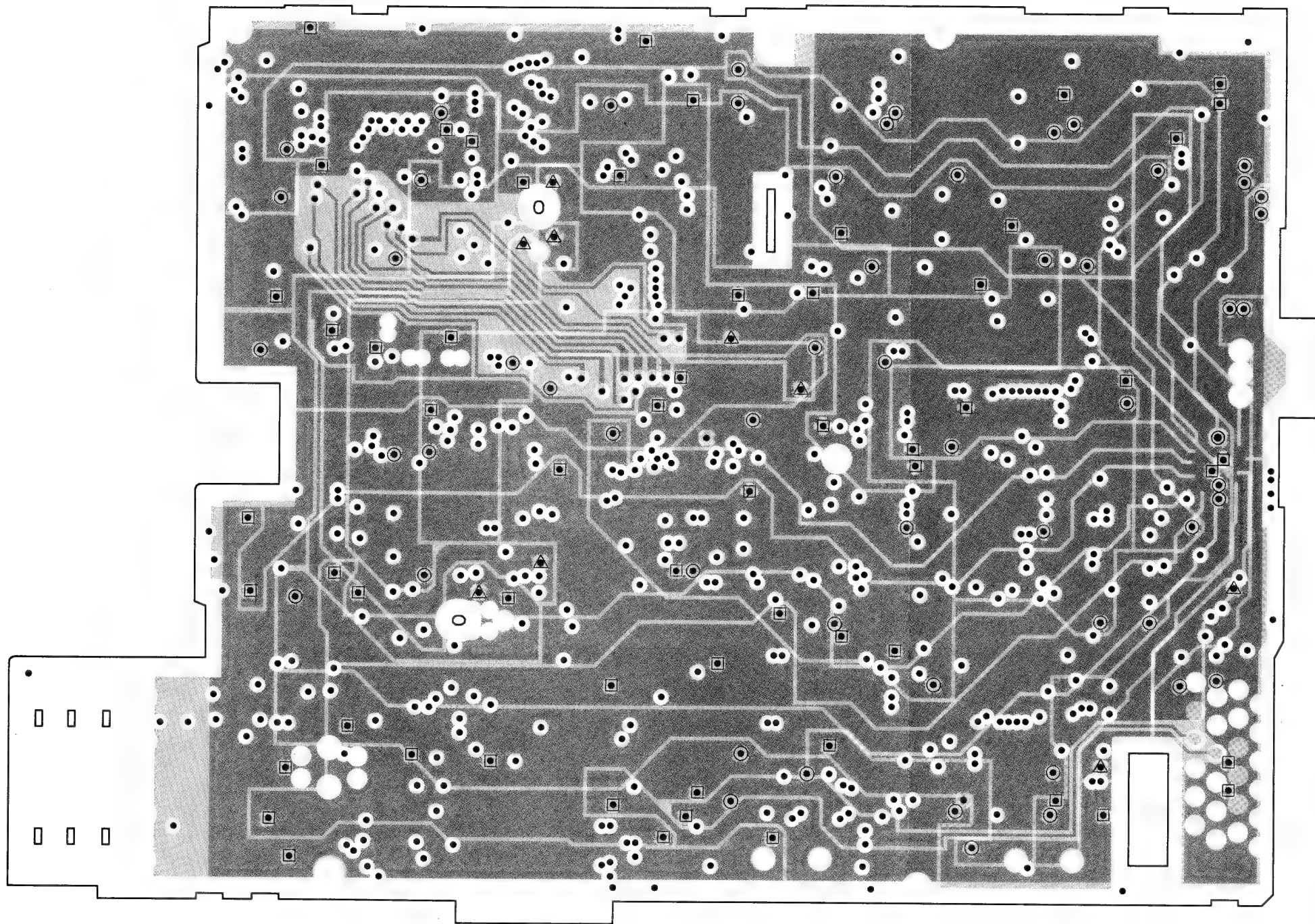
- The numbers ① to ③⑧ are waveform number shown in page 68, 72.
- NOTES ON SCHEMATIC DIAGRAM can be found on page 83.

• DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

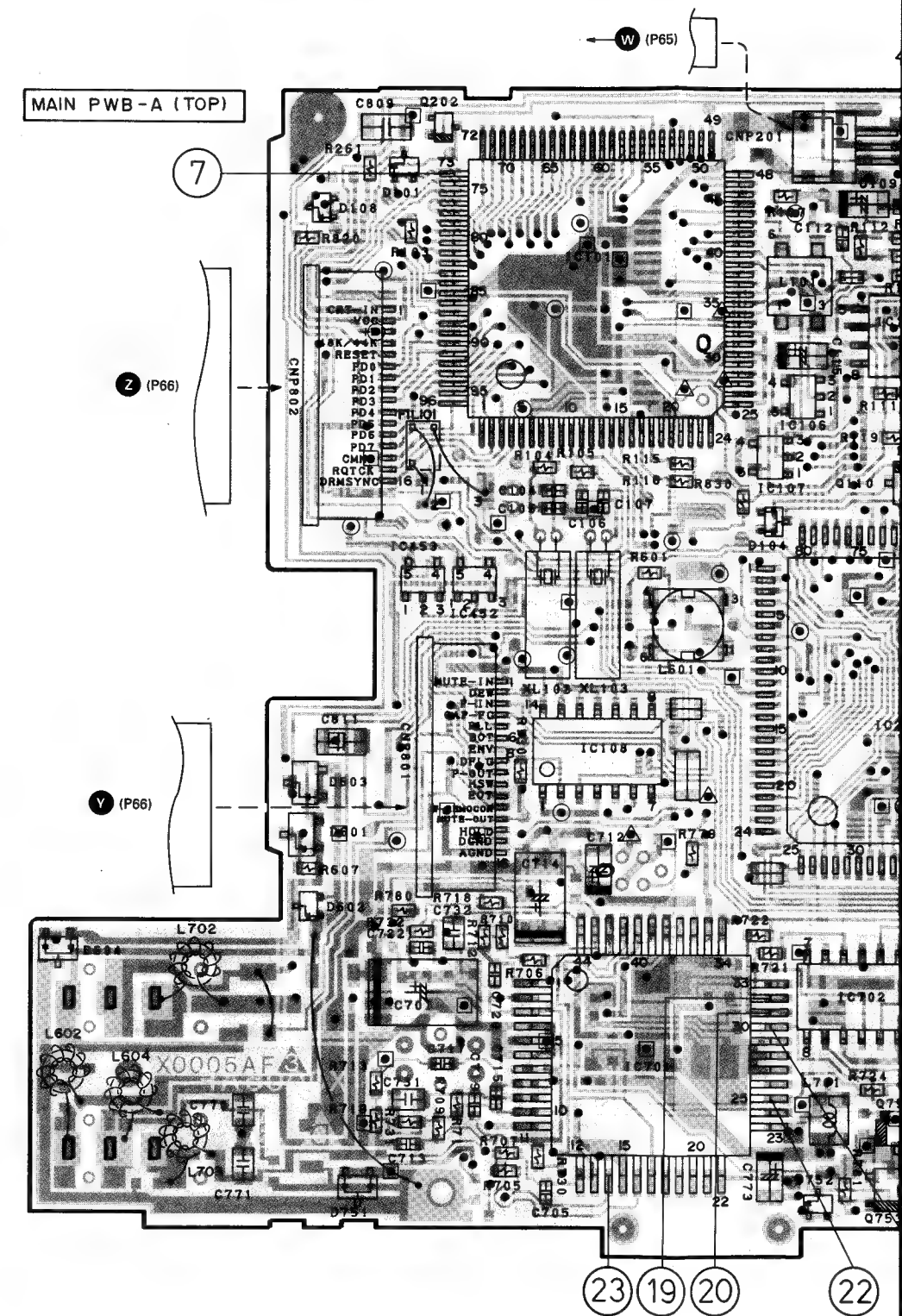
**CAUTION :** For components only (refer to parts list). To reduce or resistance mea parts are accept before the applian



MAIN UNIT



- : Second layer pattern in the PWB.
- : Third layer pattern in the PWB.
- : Thru-hole where the top and bottom side patterns are connected.
- : Thru-hole where the +B lines are connected.
- : Thru-hole where the earth lines are connected.
- ▲ : Thru-hole where the jumper lines are connected.



- : Top side of PWB.
- : Bottom side of PWB.

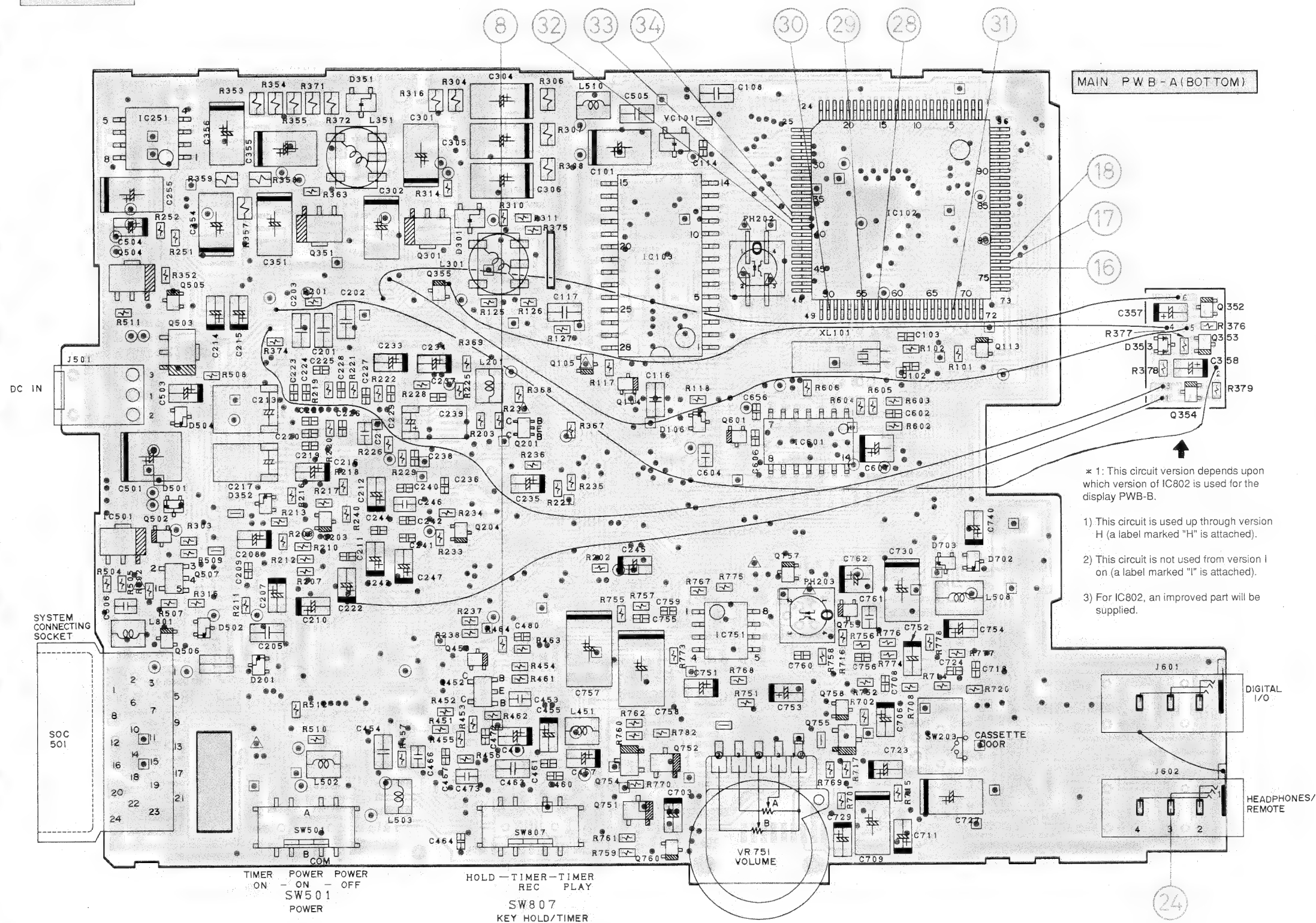
• The number of components is not shown in this drawing.  
Refer to the component list for details.







# MAIN UNIT

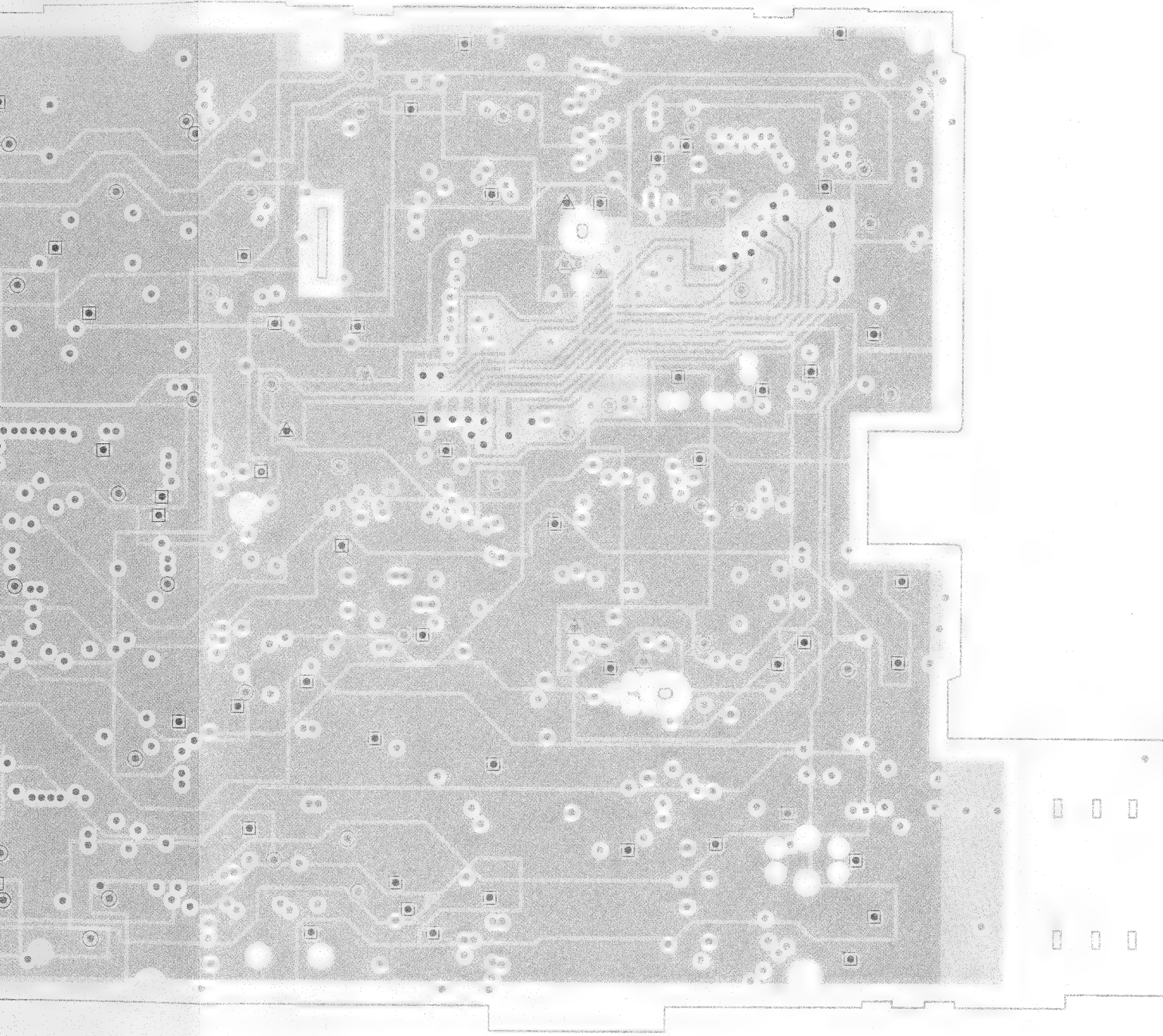


- \* 1: This circuit version depends upon which version of IC802 is used for the display PWB-B.
- 1) This circuit is used up through version H (a label marked "H" is attached).
  - 2) This circuit is not used from version I on (a label marked "I" is attached).
  - 3) For IC802, an improved part will be supplied.

- : Top side of PWB.
- : Bottom side of PWB.
- : Thru-hole where the top and bottom side patterns are connected.
- : Thru-hole where the +B lines are connected.
- : Thru-hole where the earth lines are connected.
- ▲ : Thru-hole where the jumper lines are connected.

- : Second layer pattern in the PWB.
- ▲ : Third layer pattern in the PWB.



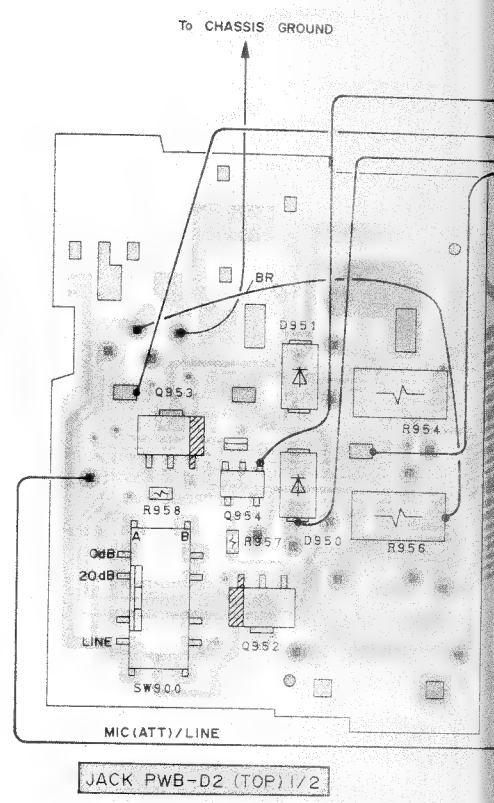
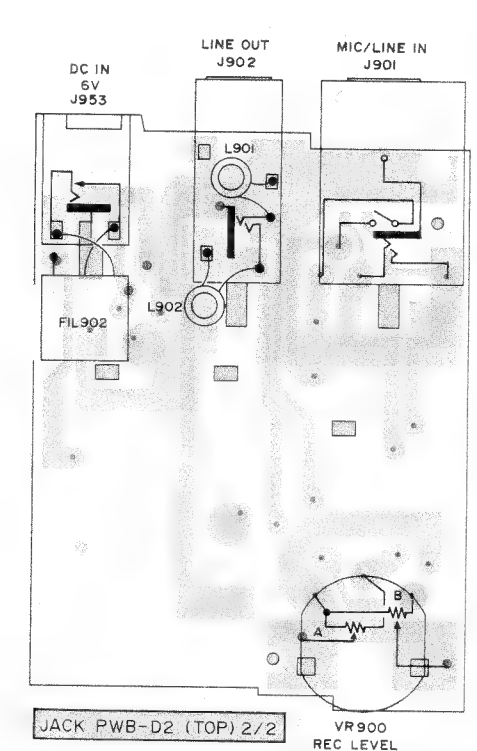


pattern in the PWB.  
ern in the PWB.

• The numbers ① to ③⑧ are waveform number shown in page 68, 72.  
Refer to the schematic diagram for the values of resistors and capacitors.

# A/D CONVERTER UNIT

- :thru-hole where the top and bottom side patterns are connected.
- :thru-hole where the patterns of flexible PWB and PWB-D2 are connected.
- : Pattern on the top side of flexible PWB.
- : Pattern on the bottom side of flexible PWB.



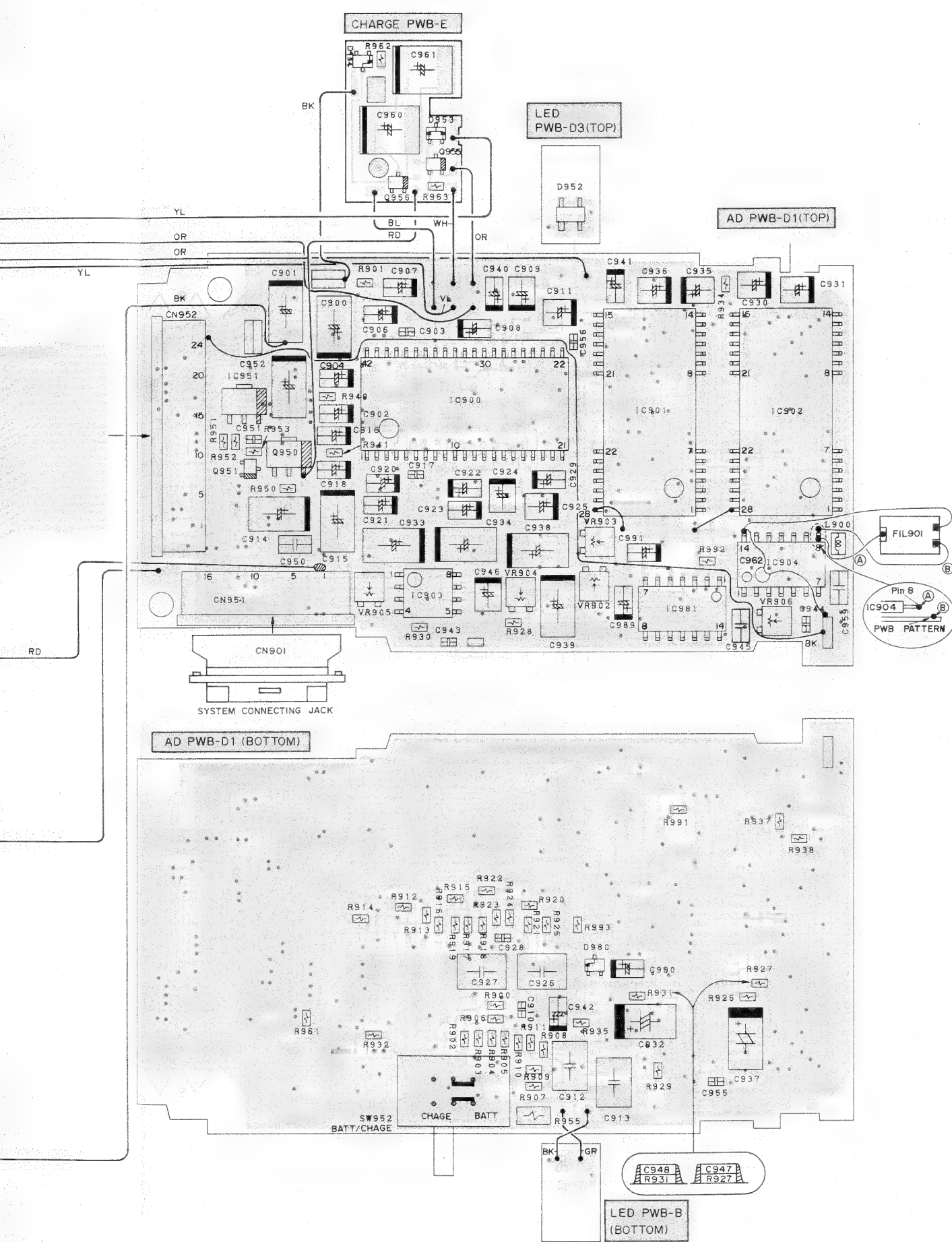
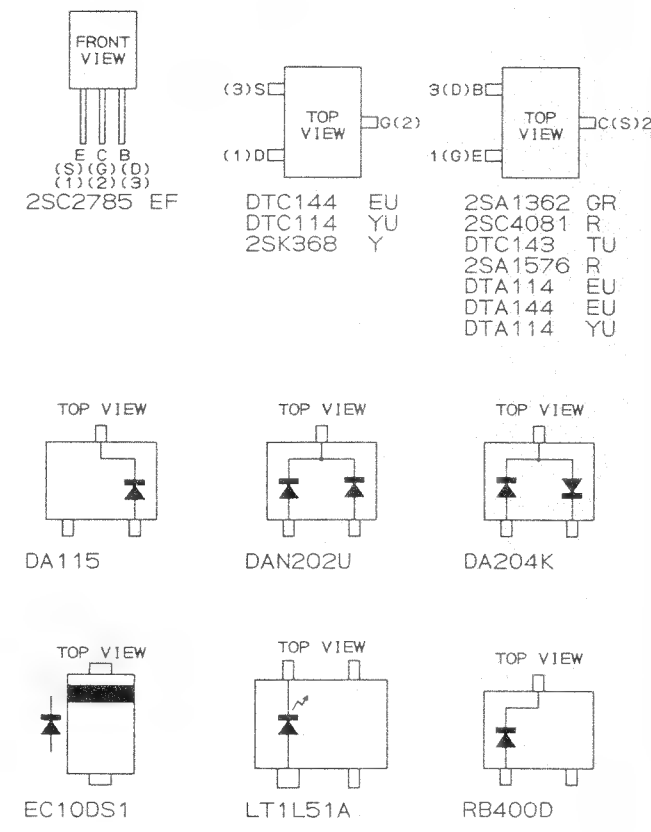
— :Top side of PWB.  
— :Bottom side of PWB.

# NOTES ON SCHEMATIC DIAGRAM (BP-A7)

- Resistor:**  
 To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.
- Capacitor:**  
 To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.  
 (CH), (TH), (RH), (UJ): Temperature compensation  
 (ML): Mylar type  
 (P.P.): Polypropylene type
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.  
 DAT  
 ( ): Play mode  
 Marking except for ( ): Stop state
- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.
- Parts marked with "△" ( ) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

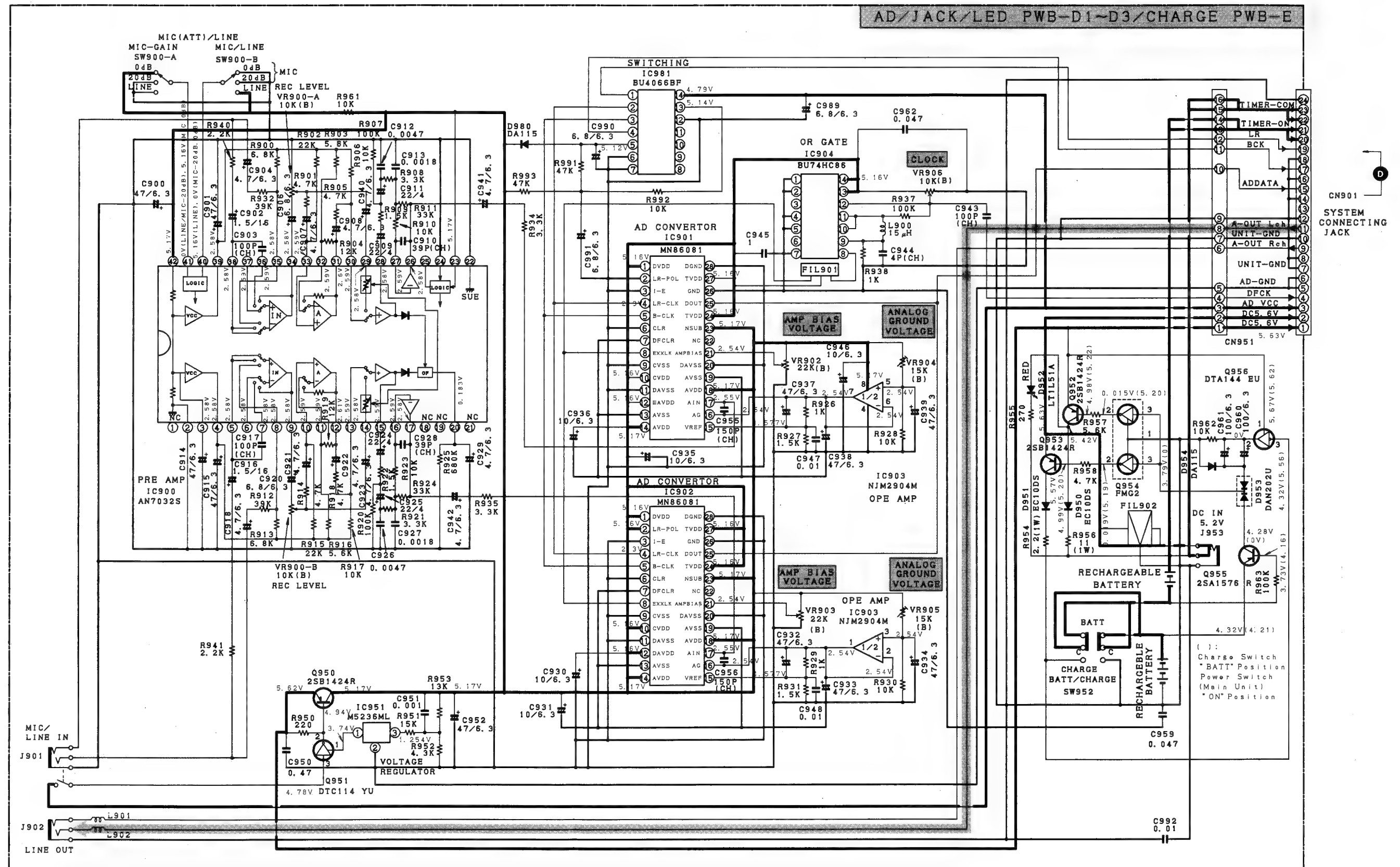
REF. NO	DESCRIPTION	POSITION
MAIN UNIT		
SW200	Mode detection	OFF
SW201	Cassette IN	OFF
SW203	Cassette door	OFF
SW501	POWER	TIMER ON
SW801	REC	OFF
SW802	PAUSE	OFF
SW803	REW REVIEW	OFF
SW804	FF CUE	OFF
SW805	PLAY/REPEAT	OFF
SW806	STOP/REJECT	OFF
SW807	KEY HOLD/TIMER	HOLD
A/D CONVERTER		
SW900	MIC(ATT)/LINE	0dB
SW952	BATT/CHARGE	BATT

## TYPES OF TRANSISTOR AND LED



## A/D CONVERTER UNIT

+B → Playback Signal

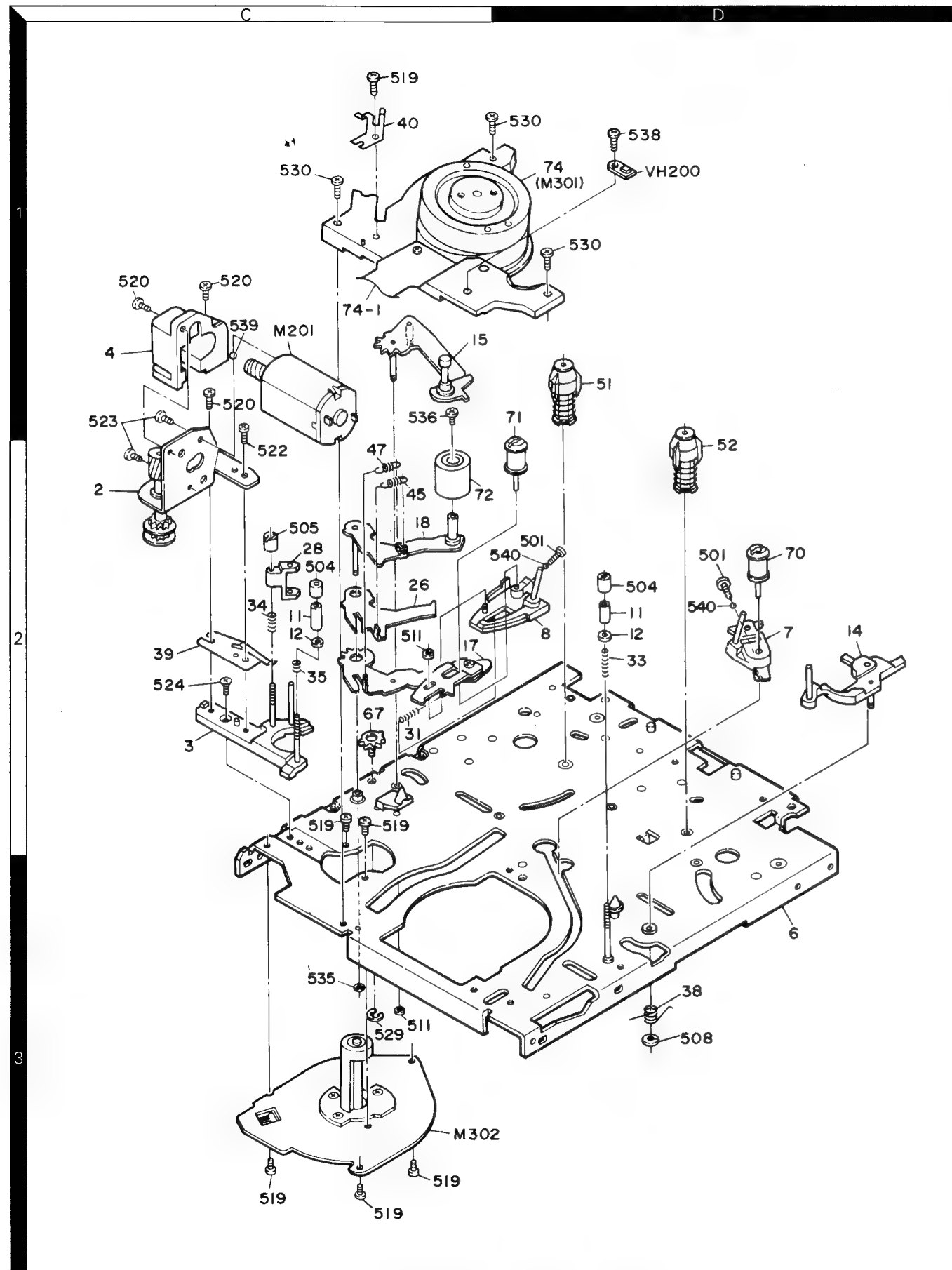


• NOTES ON SCHEMATIC DIAGRAM can be found on page 83.



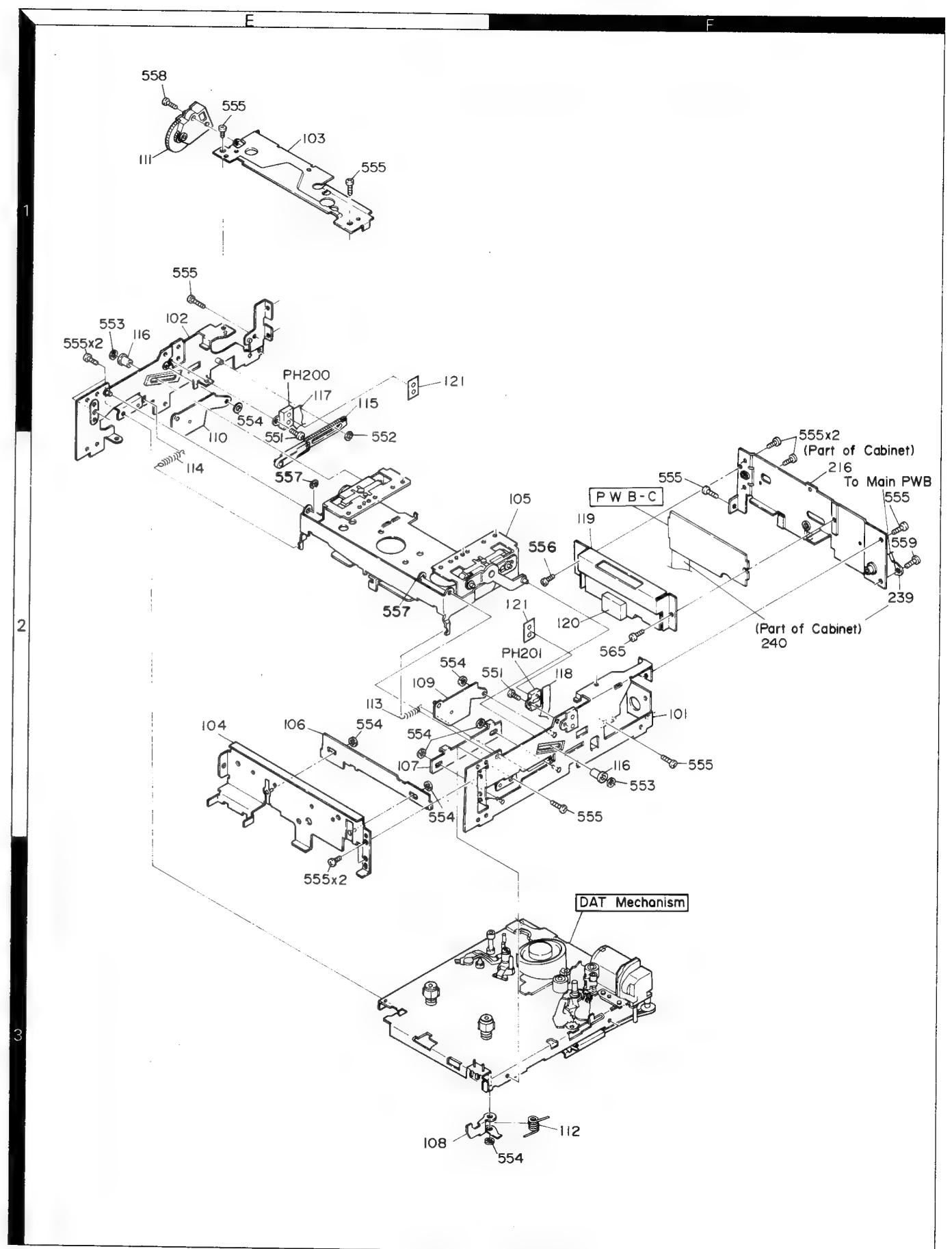


## EXPLODED VIEW (MECHANISM : DX-7)



Parts with the exploded numbers larger than 700 are not supplied.

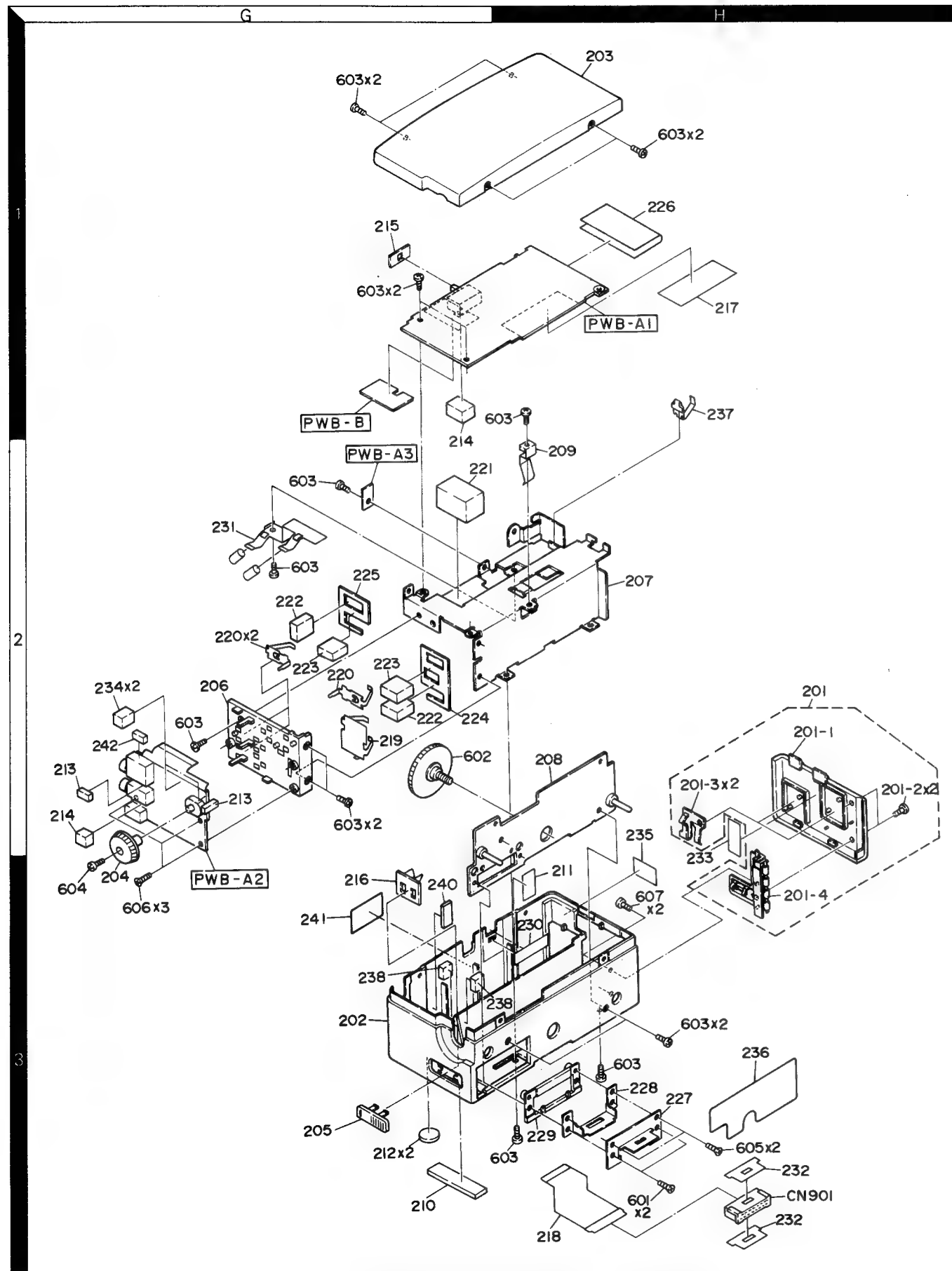
## EXPLODED VIEW (MECHANISM : DX-7)



Parts with the exploded numbers larger than 700 are not supplied.

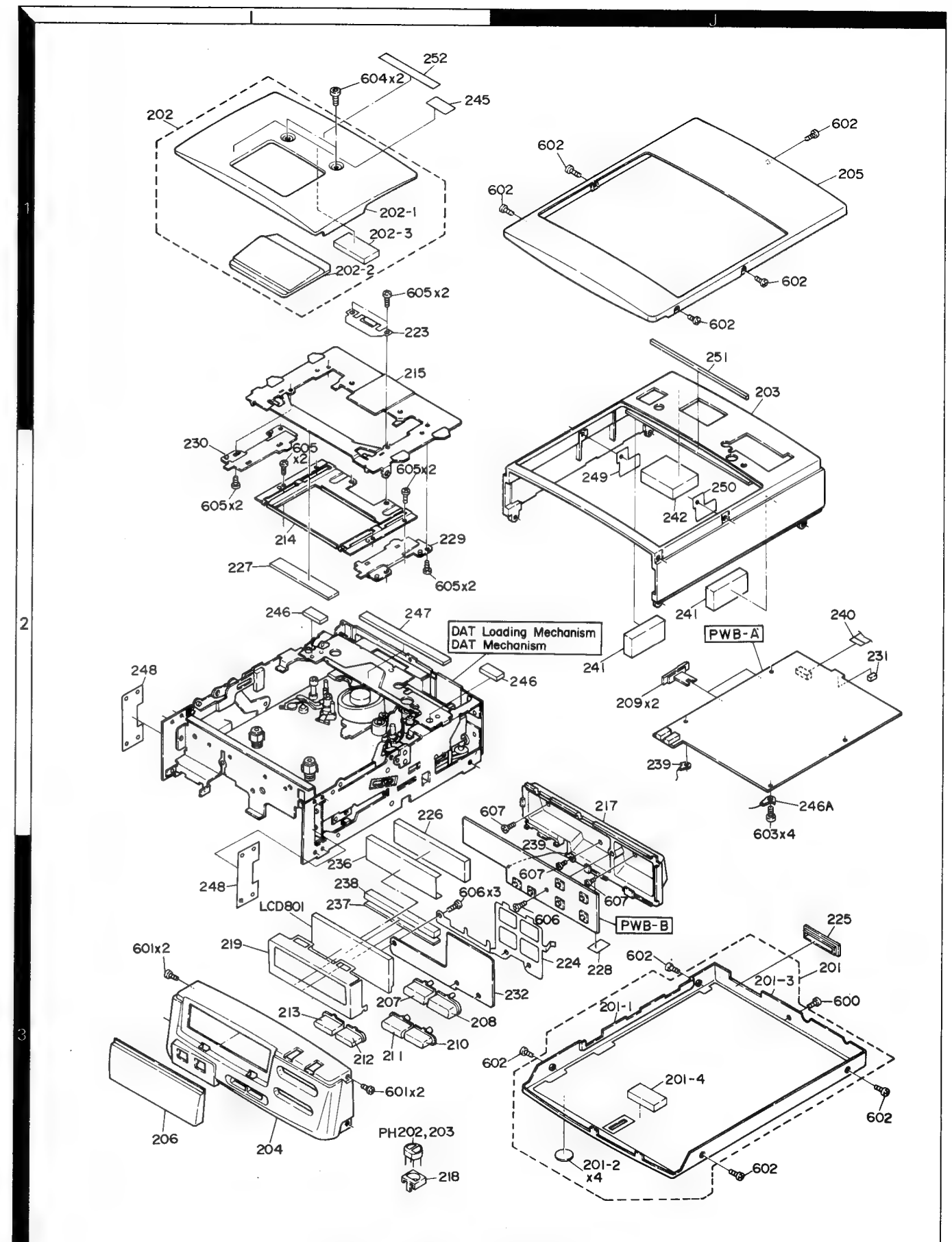


## EXPLODED VIEW (UNIT : BP-A7)



Parts with the exploded numbers larger than 700 are not supplied.

## EXPLODED VIEW (UNIT : DX-7)



Parts with the exploded numbers larger than 700 are not supplied.

※ New Parts  
Parts without Parts No. are not supplied.  
Les articles non mentionnés dans le Parts No. ne sont pas fournis.  
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕向	Re- marks 備考
<b>DX-7</b>						
201	3J	*	SH1181060005	BOTTOM CABINET ASSY		
201-2	3J	*	SH1183520008	RUBBER FOOT		
201-3	3J	*	SH1184300001	BOTTOM CABINET INSULATOR		
201-4	3J	*	SH1183260006	RUBBER CUSHION		
202-2	1I	*	SH1181240005	LID TRANSPARENT SHEET		
202-3	1I	*	SH1183260006	RUBBER CUSHION		
203	1J	*	SH1181030006	MAIN CABINET		
204	3I	*	SH1181040006	FRONT CABINET		
205	1J	*	SH1181050002	TOP CABINET		
206	3I	*	SH1181240007	LCD TRANSPARENT SHEET		
207	3I	*	SH1181740045	PLAY/REPEAT BUTTON		
208	3I	*	SH1181740046	STOP/EJECT BUTTON		
209	2J	*	SH1181740047	POWER/TIMER/KEYHOLD BUTTON		
210	3I	*	SH1181740048	FF/CUE BUTTON		
211	3I	*	SH1181740049	REW/REVIEW BUTTON		
212	3I	*	SH1181740050	PAUSE BUTTON		
213	3I	*	SH1181740051	REC BUTTON		
214	2I	*	SH1182000066	GUIDE HARDWARE (A)		
215	1I	*	SH1182000067	GUIDE HARDWARE (B)		
216	2F	*	SH1182000068	BACK PLATE		
217	2J	*	SH1182140025	DISPLAY PCB HOLDER		
218	3I	*	SH1182140033	PHOTO INTERRUPTER HOLDER		
219	3I	*	SH1182140028	LCD CASE		
223	1I	*	SH1182580100	ROLLER SPRING ASSY		
224	3J	*	SH1182580094	BUTTON STOP SPRING		
225	3J	*	SH1183120001	TERMINAL PROTECTOR		
226	2I	*	SH1183260003	LCD CUSHION		
227	2I	*	SH1183400002	FELT (GUIDE HARDWARE)		
228	3J	*	SH1183400003	HOLDER FELT		
229	2I	*	SH1183450010	CASSETTE GUIDE (R)		
230	2I	*	SH1183450011	CASSETTE GUIDE (L)		
231	2J	*	SH1183520006	JACK RUBBER		
232	3J	*	SH1183520007	BUTTON STOP RUBBER		
236	3I	*	SH1184130005	LCD PLATE		
237	3I	*	SH1184300002	INSULATOR		
238	3I	*	SH1185110001	CONDUCTIVE RUBBER		
239	2F, 2J	*	SH1185120052	CONNECTOR ASSY (LEAD WITH LUG)		
240	2F, 2J	*	SH1185210030	HEAD AMP FLEXIBLE PCB		
241	2J	*	SH1183260006	RUBBER CUSHION		
242	2J	*	SH1183260007	RUBBER CUSHION		
245	1I	*	SH1189170015	PUSH LABEL		
246	2I	*	SH1183260010	CUSHION (9X5X2)		
246A	2J	*	SH1185120068	CONNECTOR ASSY (LEAD WITH LUG)		
247	2I	*	SH1183260011	CUSHION (50X5X2)		
248	2I, 3I	*	SH1184130009	FRONT CABINET SPACER		
249	2J	*	SH1184130010	MAIN CABINET SPACER (L)		
250	2J	*	SH1184130011	MAIN CABINET SPACER (R)		
251	1J	*	SH1183260014	CASSETTE LID CUSHION		
252	1I	*	SH1189170022	POWER SUPPLY CAUTION CARD		
600	3J	*	SH1189700075	SCREW (1.7X3)		
601	3I	*	SH1189700066	SCREW (1.7X4)		
602	1J, 3J	*	SH1189700050	SCREW (1.7X5)		

E: Scandinavia & Europe K: USA P: Canada W: Europe

Y: PX(Far East, Hawaii) T: England M: Other Areas

Y: AAFES(Europe) X: Australia

△ indicates safety critical components.

※ New Parts  
Parts without Parts No. are not supplied.  
Les articles non mentionnés dans le Parts No. ne sont pas fournis.  
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕向	Re- marks 備考
603	2J	*	SH1189700091	SCREW (1.4X3)		
604	1I	*	SH1189700112	SCREW (1.7X3)		
605	1I, 2I	*	SH1189700053	SCREW (1.7X1.5)		
606	3I, 3J	*	SH1189700054	SCREW (1.7X4)		
607	2J, 3J	*	SH1189700107	SCREW (1.7X3)		
-	-	*	A70-0523-08	REMOTE CONTROL	T	
-	-	*	B46-0143-13	WARRANTY CARD	KEMY	
-	-	*	B46-0177-14	WARRANTY CARD	YM	
-	-	*	B60-0410-08	INSTRUCTION MANUAL		
-	-	*	E30-2641-08	AUDIO CORD ASSY (ANALOG)		
-	-	*	E30-2642-08	AUDIO CORD ASSY (DIGITAL)	YM	
-	-	*	E69-0001-05	PLUG ADAPTER		
-	-	*	SH1165240007	AC PLUG ADAPTER	YM	
-	-	*	SH1185420004	AUDIO CORD ASSY (DIGITAL)	KET	
-	-	*	SH1185420005	AUDIO CORD ASSY (ANALOG)	KET	
-	-	*	SH1189010018	CARTON CASE		
-	-	*	SH1189020048	POLYSTYRENE FIXTURE (BOTTOM)		
-	-	*	SH1189020049	POLYSTYRENE FIXTURE (TOP)	K	
-	-	*	SH1189020050	AD SPACER		
-	-	*	SH1189050007	POLY BAG (UNIT)		
-	-	*	SH1209060016	POLY BAG (ACCESSORY)		
-	-	*	W08-0002-08	AC ADAPTER	K	
-	-	*	W08-0003-08	AC ADAPTER	EMY	
-	-	*	W08-0005-08	AC ADAPTER	T	
-	-	*	SH1186850039	MAIN PCB ASSY		
PWB-A	-	*	SH1186850041	DISPLAY PCB ASSY		
PWB-B	-	*	SH1186850040	HEAD AMP PCB ASSY		
PWB-C	-	*	SH1186850040	HEAD AMP PCB ASSY		
<b>BP-A7</b>						
201-2	2H	*	SH1189700085	SCREW (1.7X2.5)		
201-3	2H	*	SH1185320011	BATTERY TERMINAL (A)		
201-4	3H	*	SH1185370001	HINGE ASSY		
202	3G	*	SH1181030011	MAIN CABINET		
203	1H	*	SH1181040004	TOP CABINET		
204	3G	*	SH1181740043	REC LEVEL KNOB		
205	3G	*	SH1181740044	MIC/LINE KNOB		
206	2G	*	SH1182140029	FRAME B		
207	2H	*	SH1182140030	FRAME A		
208	2H	*	SH1182140032	FRAME ASSY		
209	2H	*	SH1182580096	BOTTOM STOP SPRING		
210	3G	*	SH1183230011	CAP		
211	3H	*	SH1183370001	LED FILTER		
212	3G	*	SH1423520010	RUBBER FOOT (REAR, 8X1.6)		
213	2G	*	SH1183520009	TERMINAL RUBBER (4X6X2.5)		
214	2G	*	SH1183520010	TERMINAL RUBBER (4X6X4)		
215	1G	*	SH1184130008	KNOB SPACER		
216	3G	*	SH1184130006	KNOB SPACER		
217	1H	*	SH1184300003	INSULATOR		
218	3H	*	SH1185210036	FLEXIBLE PCB (24P)		
219	2G	*	SH1185320002	BATTERY TERMINAL (B)		
220	2G	*	SH1185320003	BATTERY TERMINAL (C)		
221	2G	*	SH1183260008	CUSHION (PCB, 15X10X10)		
222	2G	*	SH1183520011	PROTECTIVE RUBBER (4X10X8.8)		
223	2G	*	SH1183520012	PROTECTIVE RUBBER (4X11X7.5)		
224	2G	*	SH1184030007	TERMINAL PROTECTOR (24X15)		

E: Scandinavia & Europe K: USA P: Canada W: Europe

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Y: AAFES(Europe) X: Australia

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Ref. No. 参照番号	Address 位置	New Parts	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕向	Re- marks 備考
225	2G	*	SH1184030008	TERMINAL PROTECTOR (16.7X15)		
226	1H	*	SH1184030006	HOLE COVER		
227	3H	*	SH1102140267	TERMINAL HARDWARE (TOP)		
228	3H	*	SH1102140258	TERMINAL HARDWARE (BOTTOM)		
229	3H	*	SH1182140034	TERMINAL HOLDER BASE		
230	3H	*	SH1184030009	SHEET		
231	2G	*	SH1182580095	BATTERY STOP SPRING		
232	3H	*	SH1184300004	INSULATOR (24P)		
233	3H	*	SH1184030010	LOCK SUB SHEET		
234	2G	*	SH1183520013	SPACER RUBBER		
235	2H	*	SH1189140004	BATTERY CAUTION SHEET		
236	3H	*	SH1189170032	CONNECTION CAUTION SHEET		
237	1H	*	SH1182580101	BATTERY STOP SPRING		
238	3G, 3H	*	SH1183520015	GUIDE RUBBER (3.4X3.4)		
240	3G	*	SH1184130017	CUSHION GUIDE (7.8X17)		
241	3G	*	SH1189140013	RECHARGEABLE BATTERY LABEL		
242	2G	*	SH1183520016	JACK RUBBER (2.5X4X2)		
601	3H	*	SH1189700083	SCREW (1.7X2)		
602	2G	*	SH1189700061	SCREW (5.6X7)		
603	2G, 1H	*	SH1189700075	SCREW (1.7X3)		
604	3G	*	SH1189700063	SCREW (1.4X4)		
605	3H	*	SH1189700065	SCREW (1.7X2)		
606	3G	*	SH1189700081	SCREW (1.7X4)		
607	3H	*	SH1189700097	SCREW (1.7X2)		
-	-	*	B46-0143-13	WARRANTY CARD	E	
-	-	*	B46-0177-14	WARRANTY CARD	E	
-	-	*	SH1189010017	CARTON CASE		
-	-	*	SH1189020022	PROTECTOR		
-	-	*	SH1189020023	PROTECTOR (TOP)		
-	-	*	SH1189050006	POLY BAG (BP-A7)		
-	-	*	SH1189160019	INSTRUCTION MANUAL (ENGLISH)		
-	-	*	SH1189160023	INSTRUCTION MANUAL (5-LANG)		
-	-	*	SH1189320005	RECHARGEABLE BATTERY (2)		
-	-	*	SH1189320006	RECHARGEABLE BATTERY (3)		
-	-	*	W01-0369-08	CARRYING CASE		
<b>ELECTRIC PARTS</b>						
C1	-	*	CK73GB1H103K	CHIP C	0.010UF	K
C101	-	*	SH1185920006	CHIP-TAN	22UF	6.3WV
C102-105	-	*	CC73GCH1H070D	CHIP C	7PF	D
C106, 107	-	*	CC73GCH1H060D	CHIP C	6PF	D
C108	-	*	CK73EB1C105Z	CHIP C	1.0UF	Z
C109	-	*	SH1425920009	CHIP-TAN	10UF	4WV
C110, 111	-	*	CK73FB1H104Z	CHIP C	0.10UF	Z
C112	-	*	CC73GCH1H151J	CHIP C	150PF	J
C114	-	*	CK73GB1E103K	CHIP C	0.010UF	K
C115	-	*	SH1425920005	CHIP-TAN	3.3UF	6.3WV
C116, 117	-	*	CK73EB1C105Z	CHIP C	1.0UF	Z
C118	-	*	CK73GB1H472K	CHIP C	4700PF	K
C201-203	-	*	CK73EB1C474Z	CHIP C	0.47UF	Z
C205	-	*	CK73EB1C105Z	CHIP C	1.0UF	Z
C207, 208	-	*	SH1425920009	CHIP-TAN	10UF	4WV
C209	-	*	CK73GB1E103K	CHIP C	0.010UF	K
C210	-	*	SH1425920019	CHIP-TAN	4.7UF	6.3WV
C211	-	*	CK73GB1E103K	CHIP C	0.010UF	K
C212	-	*	SH1425920019	CHIP-TAN	4.7UF	6.3WV

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Y: AAFES(Europe) X: Australia

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Ref. No. 参照番号	Address 位置	New Parts	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕向	Re- marks 備考
C213	-	*	SH1185900021	NP-ELEC	10UF	6.3WV
C214-216	-	*	SH1425920009	CHIP-TAN	10UF	4WV
C217	-	*	SH1185900020	NP-ELEC	2.2UF	6.3WV
C218	-	*	CK73FB1C224Z	CHIP C	0.22UF	Z
C219, 220	-	*	CK73GB1E103K	CHIP C	0.010UF	K
C221	-	*	CC73GCH1H101J	CHIP C	100PF	J
C222	-	*	SH1185920005	CHIP-TAN	6.8UF	6.3WV
C223	-	*	CC73GCH1H101J	CHIP C	100PF	J
C224, 225	-	*	CK73GB1H102K	CHIP C	1000PF	K
C226	-	*	CK73GB1E103K	CHIP C	0.010UF	K
C227	-	*	CC73GCH1H180J	CHIP C	18PF	J
C228	-	*	CC73GCH1H271J	CHIP C	270PF	J
C229	-	*	CC73GCH1H180J	CHIP C	18PF	J
C230	-	*	CC73GCH1H271J	CHIP C	270PF	J
C231	-	*	CC73GCH1H331J	CHIP C	330PF	J
C232	-	*	CK73GB1E103K	CHIP C	0.010UF	K
C233, 234	-	*	SH1425920009	CHIP-TAN	10UF	4WV
C235	-	*	SH1425920005	CHIP-TAN	3.3UF	6.3WV
C236	-	*	CK73GB1E103K	CHIP C	0.010UF	K

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C427 C428-431 C432, 433 C434, 435 C436			CK73EB1C105Z CK73GB1H392K CC73GCH1H181J CK73GB1H562K CK73FB1H104Z	CHIP C 1.0UF Z CHIP C 3900PF K CHIP C 180PF J CHIP C 5600PF K CHIP C 0.10UF Z		
C437 C438 C439 C441 C442, 443		*	SH1185920002 CK73GB1H122K SH1185920006 CC73GCH1H181J CC73GCH1H150J	CHIP-TAN 47UF 6.3WV CHIP C 1200PF K CHIP-TAN 22UF 6.3WV CHIP C 180PF J CHIP C 15PF J		
C451 C452 C453 C454 C455		*	SH1185920005 CK73GB1H102K CK73FB1E223K CK73EB1C105Z SH1115920014	CHIP-TAN 6.8UF 6.3WV CHIP C 1000PF K CHIP C 0.02UF K CHIP C 1.0UF Z CHIP-TAN 2.2UF 6.3WV		
C456 C457 C458 C460, 461 C463		*	CK73GB1E103K SH1425920019 CK73FB1H104Z CK73GB1E103K CK73EB1C105Z	CHIP C 0.010UF K CHIP-TAN 4.7UF 6.3WV CHIP C 0.10UF Z CHIP C 0.010UF K CHIP C 1.0UF Z		
C464, 465 C466 C467-472 C473 C480			CK73GB1E103K CC73FCH1H390J CK73GB1E103K CK73FB1E473K CC73GCH1H101J	CHIP C 0.010UF K CHIP C 39PF J CHIP C 0.010UF K CHIP C 0.047UF K CHIP C 100PF J		
C501 C502 C503, 504 C505 C506		*	SH1185920008 CK73GB1H102K SH1185920005 CK73EB1C474Z CK73GB1C104Z	CHIP-TAN 100UF 6.3WV CHIP C 1000PF K CHIP-TAN 6.8UF 6.3WV CHIP C 0.47UF Z CHIP C 0.10UF Z		
C510 C602 C604 C605 C606			CK73FB1E473K CK73GB1E103K CK73EB1H104Z CK73GB1H102K CK73GB1E103K	CHIP C 0.047UF K CHIP C 0.010UF K CHIP C 0.10UF Z CHIP C 1000PF K CHIP C 0.010UF K		
C607 C701 C703 C705 C706		*	SH1305920049 SH1185920007 SH1185920005 CC73GCH1H221J SH1425920019	CHIP-TAN 10UF 6.3WV CHIP-TAN 100UF 6.3WV CHIP-TAN 6.8UF 6.3WV CHIP C 220PF J CHIP-TAN 4.7UF 6.3WV		
C708 C709 C711 C712 C713		*	CC73GCH1H221J SH1185920005 SH1425920019 SH1185920005 CK73GB1H122K	CHIP C 220PF J CHIP-TAN 6.8UF 6.3WV CHIP-TAN 4.7UF 6.3WV CHIP-TAN 6.8UF 6.3WV CHIP C 1200PF K		
C714 C715 C717 C718 C719, 720		*	SH1185920005 CK73GB1H681K CK73GB1H102K CK73GB1H122K CC73GCH1H471J	CHIP-TAN 6.8UF 6.3WV CHIP C 680PF K CHIP C 1000PF K CHIP C 1200PF K CHIP C 470PF J		
C722 C723 C724 C727 C729		*	CK73GB1H102K SH1115920014 CK73GB1H681K SH1185920005 SH1185920005	CHIP C 1000PF K CHIP-TAN 2.2UF 6.3WV CHIP C 680PF K CHIP-TAN 6.8UF 6.3WV CHIP-TAN 6.8UF 6.3WV		

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C730 C731, 732 C740 C751-754 C755, 756		*	SH1305900279 CK73FB1E474Z SH1185920011 SH1425920019 CK73GB1E103K	ELECTRO 22UF 4WV CHIP C 0.47UF Z CHIP-TAN 2.2UF 6.3WV CHIP-TAN 4.7UF 6.3WV CHIP C 0.010UF K		
C757, 758 C759, 760 C761 C762 C770, 771		*	SH1185920007 CC73GCH1H120J CK73FB1H104Z SH1185920009 CK73FB1E473K	CHIP-TAN 100UF 6.3WV CHIP C 12PF J CHIP C 0.10UF Z CHIP-TAN 15UF 6.3WV CHIP C 0.047UF K		
C773 C801 C802 C803, 804 C805		*	SH1425920019 CK73GB1E103K CK73FB1H104Z CC73GCH1H101J CK73FB1H104Z	CHIP-TAN 4.7UF 6.3WV CHIP C 0.010UF K CHIP C 0.10UF Z CHIP C 100PF J CHIP C 0.10UF Z		
C806 C807, 808 C809 C810 C811			CK73FB1H562K CC73GCH1H100D CK73EB1C105Z SH1185920005 CK73EB1C105Z	CHIP C 5600PF K CHIP C 10PF D CHIP C 1.0UF Z CHIP-TAN 6.8UF 6.3WV CHIP C 1.0UF Z		
CNP201 CNP202-20 CNP251 CNS251 CNP301	4	*	SH1185100029 SH1185100018 SH1185100019 SH1186300018 SH1185100025	SOCKET (3P) SOCKET (4P) PLUG (2P) ASSY WITH M201 SOCKET (17P)		
CNP351 CNP401 CNP451 CNP801, 80 J501	2	*	SH1185100024 SH1185100021 SH1185100023 SH1185100027 SH1185170004	SOCKET (15P) SOCKET (10P) SOCKET (8P) SOCKET (16P) DC JACK		
J601, 602 L101 L201 L301 L351		*	SH1185170002 SH1186070005 SH1186140018 SH1186140012 SH1186140012	HEADPHONE JACK DIGITAL INPUT PLL CHECK COIL 390uH CHECK COIL 300uH CHECK COIL 300uH		
L403, 404 L405 L451 L452 L502, 503			SH1306140314 SH1306140309 SH1306140314 SH1186070004 SH1306140314	CHECK COIL 100uH CHECK COIL 4.7uH CHECK COIL 100uH VCO FREE RUN CHECK COIL 100uH		
L506 L508, 509 L510 L601 L602		*	SH1306140314 SH1186140019 SH1186140011 SH1186600002 SH1306140222	CHECK COIL 100uH CHECK COIL 100uH CHECK COIL 10uH DIGITAL OUTPUT CHECK COIL		
L604 L701 L702, 703 L801 M201		*	SH1306140222 SH1306140314 SH1306140222 SH1306140314 SH1186300018	CHECK COIL CHECK COIL 100uH CHECK COIL CHECK COIL 100uH LOADING MOTOR ASSY WITH GEAR		
M301 M302 M305C01 SW200 SW201		*	SH1186500035 SH1186300016 SH1185270005 SH1185300012 SH1185300011	DRUM MOTOR ASSY CAPSTAN MOTOR ASSY SYSTEM CONNECTING TERMINAL PUSH SWITCH (CASSETTE DET) ROTARY SWITCH (MODE)		

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SW203 SW501 SW801-806 SW807 VH200		*	SH1185300014 SH1305301259 SH1185300010 SH1305301259 SH1186180003	PUSH SWITCH (CASSETTE LID) SLIDE SWITCH (POWER) KEY SWITCH (OPERATION) SLIDE SWITCH (HOLD/TIMER) DEW SENSOR		
VR201 VR202, 203 VR204, 205 VR401 VR402, 403		*	SH1186700032 SH1426700028 SH1426700030 SH1186700028 SH1426700028	TRIMMING POT 150K(B)DRUM PG TRIMMING POT 10K(B)OFFSET TRIMMING POT 47(B)EOT/BOT SEN TRIMMING POT 1K(B)ERROR RATE TRIMMING POT 10K(B)HEAD CURREN		
VR404, 405 VR451 VR751 VR801 XL101		*	SH1186700029 SH1426700028 SH1186710002 SH1426700028 SH1186160011	TRIMMING POT 4.7K(B)HEAD CURRE TRIMMING POT 10K(B)ERROR RATE POTENTIOMETER 20K(AX2)VOLUME TRIMMING POT 10K(B)RESET CRYSTAL OSCILLATOR (18.816MHz)		
XL102 XL103 XL801 XL802		*	SH1186160012 SH1186160013 SH1185790008 SH1186160010	CRYSTAL OSCILLATOR (22.579MHz) CRYSTAL OSCILLATOR (24.576MHz) CERAMIC OSCILLATOR (2MHz) CRYSTAL OSCILLATOR (12MHz)		
D101 D104-106 D108 D201 D301			DA115 DA115 DA115 DA115 RB400D	DIODE DIODE DIODE DIODE DIODE		
D351 D352 D353 D501 D502-504			RB400D DA115 DAN202U DAN202U DA115	DIODE DIODE DIODE DIODE DIODE		
D601 D602 D603 D604 D701-703		*	RD5.1MB1 DA115 RD5.1MB1 MTZ6.8C DA115	ZENER DIODE DIODE ZENER DIODE ZENER DIODE DIODE		
D751 D752 IC101 IC102 IC103		*	MTZ6.8C DA115 LR3823B LR3822A MB84256	ZENER DIODE DIODE IC(SIGNAL PROCESSOR) IC(SIGNAL PROCESSOR) IC(30KX8 RAM)		
IC105 IC106, 107 IC108 IC201 IC202		*	UPC842G2 TC7SU04F BU74HC74 IR3R45 LR3821B	IC (OP AMP) IC (INVERTER) IC (FLIP FLOP) IC (MOTOR SERVØ) IC (DIGITAL SERVØ)		
IC251 IC301 IC351 IC401 IC451		*	MB3854F CX20036 CX20036 HA12133M HA12062M	IC (MOTOR DRIVE) IC(MOTOR DRIVER) IC(MOTOR DRIVER) IC (PLAYBACK/RF AMP) IC (DATA STROBE)		
IC452, 453 IC501 IC601 IC701 IC702		*	TC7S04F M5236ML BU74HC04 SAA7320 BU74HC74	IC(2CH NAND GATE)) IC(VOLTAGE REGULATOR)) IC (INVERTER) IC (D/A CONVERTER) IC (FLIP FLOP)		

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IC703, 704 IC751 IC801 IC802 IC803		*	TC7S04F M5216FP M34200 HD6475328F M51955BF	IC(2CH NAND GATE)) IC (OP AMP) IC (DISPLAY PROCESSOR) IC (SYSTEM CONTROL PROCESSOR) IC (BATTERY VOLTAGE CHECKER)		
IC804 LCD801 PH200 PH201 PH202, 203		*	M51957AF SH1185640004 GP2L23R GP2L23L GP2L22B	IC (RESET) LCD PHOTO INTERRUPTER PHOTO INTERRUPTER PHOTO INTERRUPTER		
Q1 Q2 Q104 Q105 Q106			2SD1060S 2SC2785 DTC144EU 2SA1362GR DTC144EU	TRANSISTOR FET TRANSISTOR TRANSISTOR TRANSISTOR		
Q107 Q110 Q112 Q113 Q201		*	2SC4081R 2SK368Y DTA114EU DTC144EU UMA9	TRANSISTOR FET TRANSISTOR TRANSISTOR TRANSISTOR		
Q202 Q203, 204 Q301 Q351 Q352, 353		*	2SC4081R DTA144EU 2SB1424R 2SB1424R DTC144E	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q354 Q355 Q401-403 Q452 Q453		*	DTA114Y DTC144EU 2SC4081R FMS1 2SC4081R	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q501 Q502 Q503, 504 Q505 Q506		*	DTC144EU DTC143TU 2SB1424R DTC114YU DTC144EU	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q507 Q601 Q751-756 Q757 Q758		*	FMC1 DTC114YU DTC323TK DTC144EU DTA114EU	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		
Q759 Q760 Q801 VC101		*	2SC4081R DTA114EU DTC144EU KV1530	TRANSISTOR TRANSISTOR TRANSISTOR VARICAP		
C900, 901 C902 C903 C904 C906		*	SH1185920002 SH1305920058 CC73GCH1H101J SH1425920019 SH1185920005	CHIP-TAN 47UF 6.3WV CHIP-TAN 1.5UF 16WV CHIP C 100PF J CHIP-TAN 4.7UF 6.3WV CHIP-TAN 6.8UF 6.3WV		
C907, 908 C909 C910 C911 C912		*	SH1425920019 SH1305920059 CC73GCH1H390J SH1305920059 SH1185960007	CHIP-TAN 4.7UF 6.3WV CHIP-TAN 22UF 4WV CHIP C 39PF J CHIP-TAN 22UF 4WV FILM 0.0047UF J		

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C913		*	SH1185960006	FILM 0.0018UF J		
C914, 915		*	SH1185920002	CHIP-TAN 47UF 6.3WV		
C916		*	SH1305920058	CHIP-TAN 1.5UF 16WV		
C917		*	CC73GCH1H101J	CHIP C 100PF J		
C918		*	SH1425920019	CHIP-TAN 4.7UF 6.3WV		
C920		*	SH1185920005	CHIP-TAN 6.8UF 6.3WV		
C921-923		*	SH1425920019	CHIP-TAN 4.7UF 6.3WV		
C924, 925		*	SH1305920059	CHIP-TAN 22UF 4WV		
C926		*	SH1185960007	FILM 0.0047UF J		
C927		*	SH1185960006	FILM 0.0018UF J		
C928		*	CC73GCH1H390J	CHIP C 39PF J		
C929		*	SH1425920019	CHIP-TAN 4.7UF 6.3WV		
C930, 931		*	SH1305920049	CHIP-TAN 10UF 6.3WV		
C932-934		*	SH1185920002	CHIP-TAN 47UF 6.3WV		
C935, 936		*	SH1305920049	CHIP-TAN 10UF 6.3WV		
C937-939		*	SH1185920002	CHIP-TAN 47UF 6.3WV		
C940-942		*	SH1425920019	CHIP-TAN 4.7UF 6.3WV		
C943		*	CC73GCH1H101J	CHIP C 100PF J		
C944		*	CC73GCH1H040C	CHIP C 4PF C		
C945		*	CK73EB1C105Z	CHIP C 1.0UF Z		
C946		*	SH1305920049	CHIP-TAN 10UF 6.3WV		
C947, 948		*	CK73GB1E103K	CHIP C 0.010UF K		
C950		*	CK73GB1C474Z	CHIP C 0.47UF Z		
C951		*	CK73GB1H102K	CHIP C 1000PF K		
C952		*	SH1185920002	CHIP-TAN 47UF 6.3WV		
C955, 956		*	CC73FCH1H151J	CHIP C 150PF J		
C959		*	CK73EB1E473K	CHIP C 0.047UF K		
C960, 961		*	SH1185920008	CHIP-TAN 100UF 6.3WV		
C962		*	VCTYPUICX473K	CHIP C 0.047UF K		
C989-991		*	SH1185920005	CHIP-TAN 6.8UF 6.3WV		
C992		*	CK73GB1E103K	CHIP C 0.010UF K		
L900		*	SH1186140017	CHOCK COIL(15uH)		
L901, 902		*	SH1306140222	CHOCK COIL		
CN901		*	SH1185170005	CONNECTOR (SYSTEM)		
CN951		*	SH1185100027	SOCKET (16P)		
CN952		*	SH1185100028	SOCKET (24P)		
FIL101		*	SH1186120003	EMI FIL TER		
FIL901		*	SH1186120003	EMI FIL TER		
FIL902		*	SH1426140006	EMI FILTER		
J901		*	SH1305170434	INPUT JACK (MIC/LINE)		
J902		*	SH1185170006	OUTPUT JACK (LINE)		
J953		*	SH1185170004	DC JACK		
SW900		*	SH1305301259	SLIDE SWITCH (MIC/LINE)		
SW952		*	SH1185300013	SLIDE SWITCH (BATT/CHARGE)		
VR900		*	SH1186720001	POTENTIOMETER 10K(B) REC LEVEL		
VR902, 903		*	SH1426700029	TRIMMING POT 22K(B) BIAS		
VR904, 905		*	SH1186700031	TRIMMING POT 15K(B) VOLTAGE		
VR906		*	SH1426700028	TRIMMING POT 10K(B) CLOCK		
D950, 951		*	EC100DS	DIODE		
D952		*	LT1L51A	LED		
D953		*	DAN202U	DIODE		
D954		*	DA115	DIODE		
D980		*	DA115	DIODE		

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IC900		*	AN7032S	IC (PRE AMP)		
IC901, 902		*	MN86081	IC (AD CONVERTER)		
IC903		*	NJM2904M	IC(OP AMP X2))		
IC904		*	BU74HC86	IC (OR GATE)		
IC951		*	M5236ML	IC(VOLTAGE REGULATOR)		
IC981		*	BU4066BF	IC(ANALOG SWITCH X4))		
Q950		*	2SB1424R	TRANSISTOR		
Q951		*	DTC114YU	TRANSISTOR		
Q952, 953		*	2SB1424R	TRANSISTOR		
Q954		*	FMG2	TRANSISTOR		
Q955		*	2SA1576R	TRANSISTOR		
Q956		*	DTA144EU	TRANSISTOR		
MECHANISM PARTS						
1	1A	*	SH1182000059	CAM HARDWARE		
2	2C	*	SH1182000060	LOADING MOTOR HARDWARE		
3	2C	*	SH1182000065	TAPE GUIDE BASE ASSY		
4	1C	*	SH1182000069	GEAR COVER		
5	1A	*	SH1182010002	BAND BRAKE ASSY		
6	3A, 3D	*	SH1182070015	MAIN CHASSIS		
7	2D	*	SH1182220005	ENTERANCE POLE BASE ASSY		
8	2D	*	SH1182220006	EXIT POLE BASE ASSY		
9	2B	*	SH1304100056	MAIN SLEEVE		
10	1B	*	SH1304100064	REC-PROTECTION LEVER SLEEVE		
11	2C	*	SH1184100027	TAPE GUIDE		
12	2C	*	SH1184100028	TAPE GUIDE FRANGE		
13	2B	*	SH1184100029	CAM CONNECTING SLEEVE		
14	2D	*	SH1182480073	CASSETTE POST (L)		
15	1C	*	SH1182480074	CASSETTE POST (R)		
16	2A	*	SH1182480075	ENTERANCE LINK LEVER ASSY		
17	2C	*	SH1182480076	EXIT LINK LEVER ASSY		
18	2C	*	SH1182480077	PINCH ROLLER LEVER		
19	2A	*	SH1182480078	POST DRIVE LEVER		
20	1B	*	SH1182480079	PINCH ROLLER CONTACT LEVER		
21	3B	*	SH1182480080	FR CHANGE LEVER		
22	1A	*	SH1182480081	TENSION DRIVE LEVER		
23	2A	*	SH1182480082	REEL GEAR DRIVE LEVER		
24	1B	*	SH1182480083	BRAKE LEVER (L)		
25	2B	*	SH1182480084	BRAKE LEVER (R)		
26	2C	*	SH1182480085	PINCH ROLLER CONNECTING LEVER		
27	1B	*	SH1182480086	CAM CONNECTING LEVER		
28	2C	*	SH1182480093	TAPE GUIDE		
29	3B	*	SH1182580070	BACK TENSION SPRING		
30	2A	*	SH1182580071	OVER STROKE SPRING (L)		
31	2C	*	SH1182580072	OVER STROKE SPRING (R)		
32	2A	*	SH1182580073	TENSION SPRING		
33	2D	*	SH1182580074	TAPE GUIDE SPRING		
34	2C	*	SH1182580075	GUIDE SLEEVE SPRING (L)		
35	2C	*	SH1182580076	GUIDE SLEEVE SPRING (R)		
36	2A	*	SH1182580099	ENTERANCE HIGHT SPRING		
37	3B	*	SH1182580077	CASSETTE POST R RETURN SPRING		
38	3D	*	SH1182580078	CASSETTE POST L RETURN SPRING		
39	2C	*	SH1182580080	EXIT LINK SPRING		
40	1C	*	SH1182580081	EXIT POLE SPRING		
41	3A	*	SH1182580083	ENTERANCE POLE SPRING		

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42	2B	*	SH1182580084	R SERCH SPRING		
43	2B	*	SH1182580085	BRAKE SPRING (R)		
44	1B	*	SH1182580086	BRAKE SPRING (L)		
45	2C	*	SH1182580087	PINCH ROLLER COMPRESSION SPRIN		
46	3B	*	SH1182580088	PLAY GEAR SPRING		
47	2C	*	SH1182580089	PINCH ROLLER DRIVE SPRING		
48	1A	*	SH1182580090	TENSION SERV SPRING		
49	1B	*	SH1182710006	CAPSTAN MOTOR BELT		
50	3B	*	SH1182710007	DRIVE BELT		
51	1D	*	SH1182750005	TAKEUP REEL DISK (UP)		
52	2D	*	SH1182750006	SUPPLY REEL DISK (UP)		
53	2A, 3B	*	SH1182750007	REEL DISK (BOTTOM)		
54	3B	*	SH1182810035	PLAY GEAR ASSY		
55	2B	*	SH1182810036	FF GEAR		
56	2B	*	SH1182810037	SLIP GEAR ASSY		
57	2A	*	SH1182810038	CONNECTING GEAR		
58	2A, 2B	*	SH1182810039	CHANGE GEAR		
59	2B	*	SH1182810040	SPEED-DOWN GEAR		
60	2B	*	SH1182810041	INTERMEDIATE GEAR		
61	2B	*	SH1182810042	CAM DRIVE GEAR		
62	3A	*	SH1182810043	TIMING GEAR		
63	1A	*	SH1182810044	CAM GEAR		
64	1B	*	SH1182810045	CAM GEAR (L)		
65	1B	*	SH1182810046	CAM CONNECTING GEAR		
66	2A	*	SH1182810047	TENSION GEAR		
67	1C	*	SH1182810049	PINCH ROLLER DRIVE GEAR ASSY		
68	1B	*	SH1182840008	REEL PULLEY		
69	3B	*	SH1182840009	DRIVE PULLEY		
70	2D	*	SH1182870010	ENTERANCE GUIDE ROLLER		
71	1B	*	SH1182870011	EXIT GUIDE ROLLER		
72	2C	*	SH1182870012	PINCH ROLLER		
73	2B	*	SH1185210029	REC-PROTECTION SW FLEXIBLE PCB		
74	1D	*	SH1186850035	DRUM MOTOR ASSY(M301)		
74-1	1C	*	SH1185210031	DRUM MOTOR FLEXIBLE PCB		
75	3B	*	SH1185300012	PUSH SWITCH (CASSETTE DET, SW20		
75-1	1A	*	SH1185210032	CASSETTE DET SW FLEXIBLE PCB		
76	2B	*	SH1182480092	R SERCH BRAKE		
77	1A	*	SH1184130007	TENSION SPACER		
501	2C, 2D	*	SH1189700045	SCREW (1.2X4)		
502	2A, 2B	*	SH1189700046	SCREW (1.4X3.5)		
503	2A	*	SH1189700047	SCREW (1.4X4.8)		
504	2C, 2D	*	SH1189800003	TAPE GUIDE NUT (3X1.4)		
505	2C	*	SH1189800004	TAPE GUIDE NUT (3X1.2)		
506	2A, 3A	*	SH1309900233	WASHER (1.2X3.2X0.25)		
507	2A, 3B	*	SH1309901039	WASHER (1.0X2.4X0.25)		
508	3D	*	SH1169900047	WASHER (1.2X4.0X0.50)		
509	2A	*	SH1169900048	WASHER (1.5X3.8X0.50)		
510	2B	*	SH1189900029	WASHER (1.6X2.5X0.20)		
511	2B, 2C	*	SH1189900019	WASHER (1.2X2.5X0.25)		
512	3B	*	SH1189900020	REEL DISK WAHER		
513	3B	*	SH1189900021	WASHER (1.2X2.8X0.50)		
514	3A, 2B	*	SH1189900022	WASHER (1.5X3.2X0.25)		
515	1B	*	SH1189900023	WASHER (2.0X3.8X0.25)		
516	2A	*	SH1189900024	WASHER (3.1X5.4X0.25)		

E: Scandinavia & Europe K: USA P: Canada W: Europe  
Y: PX(Far East, Hawaii) T: England M: Other Areas  
Y: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

※ New Parts  
Parts without Parts No. are not supplied.  
Les articles non mentionnés dans le Parts No. ne sont pas fournis.  
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位 置	New Parts 新 部 品	Parts No. 部 品 番 号	Description 部 品 名 / 規 格	Desti- nation 仕 向	Re- marks 備 考
517	3B	*	SH1189900026	WASHER (3.3X4.3X0.13)		
518	2A	*	SH1189900027	WASHER (4.0X5.0X0.35)		
519	3A, 3C	*	SH1309700448	SCREW (1.4X2)		
520	1C	*	SH1309700467	SCREW (1.4X3)		
521	1A	*	SH1189700106	SCREW (1.7X3)		
522	2C	*	SH1189700079	SCREW (1.7X4.2)		
523	1C	*	SH1189700058	SCREW (1.2X2)		
524	2C	*	SH1189700087	SCREW (1.7X2.8)		
525	1B	*	SH1189700072	SCREW (1.4X1.6)		
526	2B	*	SH1309700952	SCREW (1.4X2.5)		
527	2B	*	SH1189700073	SCREW (1.7X2.5)		
528	2B	*	SH1309900180	E RING (1.2X0.3)		
529	3C	*	SH1309900278	E RING (1.5X0.4)		
530	1C, 1D	*	SH1189700014	SCREW (1.7X5)		
531	1A, 1B	*	SH1189700078	SCREW (1.7X2)		
533	1A, 1B	*	SH1189700060	SCREW (1.4X1.8)		
534		*	SH1189900028	WASHER (1.7X4.0X0.25)		
535	3C	*	SH1189900030	WASHWE (1.2X5.0X0.25)		
536	1D	*	SH1189700074	SCREW (1.2X2)		
538	1D	*	SH1189700090	SCREW (1.7X5.5)		
539	1C	*	SH1182700001	STEEL BAL (1)		
540	2D	*	SH1182700002	STEEL BAL (0.7)		
M201	1C	*	SH1186300018	LOADING MOTOR WITH GEAR		
M302	3C	*	SH1186300016	CAPSTAN MOTOR		
SW200	1A	*	SH1185300011	ROTARY SWITCH (MODE)		
WH200	1D	*	SH1186180003	DEW SENSOR		
MECHANISM ASSY						
101	2F	*	SH1182000061	SIDE PLATE ASSY(R)		
102	1E	*	SH1182000062	SIDE PLATE ASSY(L)		
103	1E	*	SH1182000063	DAMPER HARDWARE		
104	2E	*	SH1182000064	FRONT PLATE		
105	2F	*	SH1182140027	CASSETTE HOLDER ASSY		
106	2E	*	SH1182480087	LOCK PLATE		
107	2E	*	SH1182480088	LOCK DRIVE LEVER		
108	3E	*	SH1182480089	LOCK CONNECTING LEVER		
109	2E	*	SH1182480090	CASSETTE LID LEVER (R)		
110	2E	*	SH1182480091	CASSETTE LID LEVER (L)		
111	1E	*	SH1182500001	DAMPER		
112	3F	*	SH1182580079	CASSETTE HOLDER LOCK SPRING		
113	2E	*	SH1182580091	CASSETTE HOLDER RETURN SPRING	(R)	
114	2E	*	SH1182580092	CASSETTE HOLDER RETURN SPRING	(L)	
115	1E	*	SH1182810050	DAMPER CAP		
116	1E, 2F	*	SH1182870009	CASSETTE HOLDER ARM ROLLER		
117	1E	*	SH1185210027	BOT SENSOR FLEXIBLE PCB		
118	2F	*	SH1185210028	BOT SENSOR FLEXIBLE PCB		
119	2F	*	SH1184080010	HEAD AMP SHIELD PLATE		
120	2F	*	SH1183260006	RUBBER CUSHION		
121	1E, 2F	*	SH1184130016	FIBER (SENSOR)		
551	2E, 2F	*	SH1189700048	SCREW (1.4X2.5)		
552	2E	*	SH1309900233	WASHER (1.2X3.2X0.25)		
553	1E, 2F	*	SH1309901039	WASHER (1.0X2.4X0.25)		
554	1E, 2E	*	SH1189900022	WASHER (1.5X3.2X0.25)		
555	1E, 2F	*	SH1189700080	SCREW (1.7X2)		
556	2F	*	SH1189700057	SCREW (1.7X6)		



## PARTS LIST

Ref. No. 参照番号	Address 位置	New Parts 新部品	Parts No. 部品番号	Description 部品名/規格	Desti- nation 向
557	2E	*	SH1309900278	E RING (1.5X0.4)	
558	1E	*	SH1189700088	SCREW (1.4X1.5)	
559	2F	*	SH1189700075	SCREW (1.7X3)	
PH200	1E	*	SH1185740011	PHOTO INTERRUPTER (BOT)	
PH201	2F	*	SH1185740010	PHOTO INTERRUPTER (BOT)	

\* New Parts  
Parts without Parts No. are not supplied.  
Les articles non mentionnés dans le Parts No. ne sont pas fournis.  
Teile ohne Parts No. werden nicht geliefert.

E: Scandinavia & Europe K: USA P: Canada W: Europe  
Y: PK(Far East, Hawaii) T: England M: Other Areas  
Y: AA(ESEurope) X: Australia

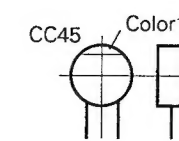
△ indicates safety critical components.

## PARTS LIST

## CAPACITORS

CC 45 TH 1H 220 J  
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc. 4 = Voltage rating  
2 = Shape ... round, square, ect. 5 = Value  
3 = Temp. coefficient 6 = Tolerance



## • Capacitor value

010 = 1pF  
100 = 10pF  
101 = 100pF  
102 = 1000pF = 0.001μF  
103 = 0.01μF

2 2 0 = 22pF  
Multiplier  
2nd number  
1st number

## • Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = -470 ± 60ppm/°C

## • Tolerance

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF -10 ~ +50 Less than 4.7μF -10 ~ +75

Less than 10pF

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

## • Voltage rating

2nd word 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	—
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	—
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	—

## • Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J  
1 2 3 4 5 6 7  
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z  
1 2 3 4 5 6 7  
(Chip) (B, F)

Refer to the table above.

## Dimension

Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

## RESISTORS

## • Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J  
1 2 3 4 5 6 7  
(Chip) (B,F)

## • Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J  
1 2 3 4 5 6 7

1 = Type ... ceramic, electrolytic, etc. 5 = Voltage rating  
2 = Shape ... round, square, ect. 6 = Value  
3 = Dimension (41) (73) 7 = Tolerance  
4 = Temp. coefficient

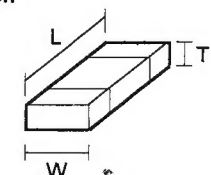
## Dimension

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6 ± 0.2	0.8 ± 0.2	0.5 ± 0.1

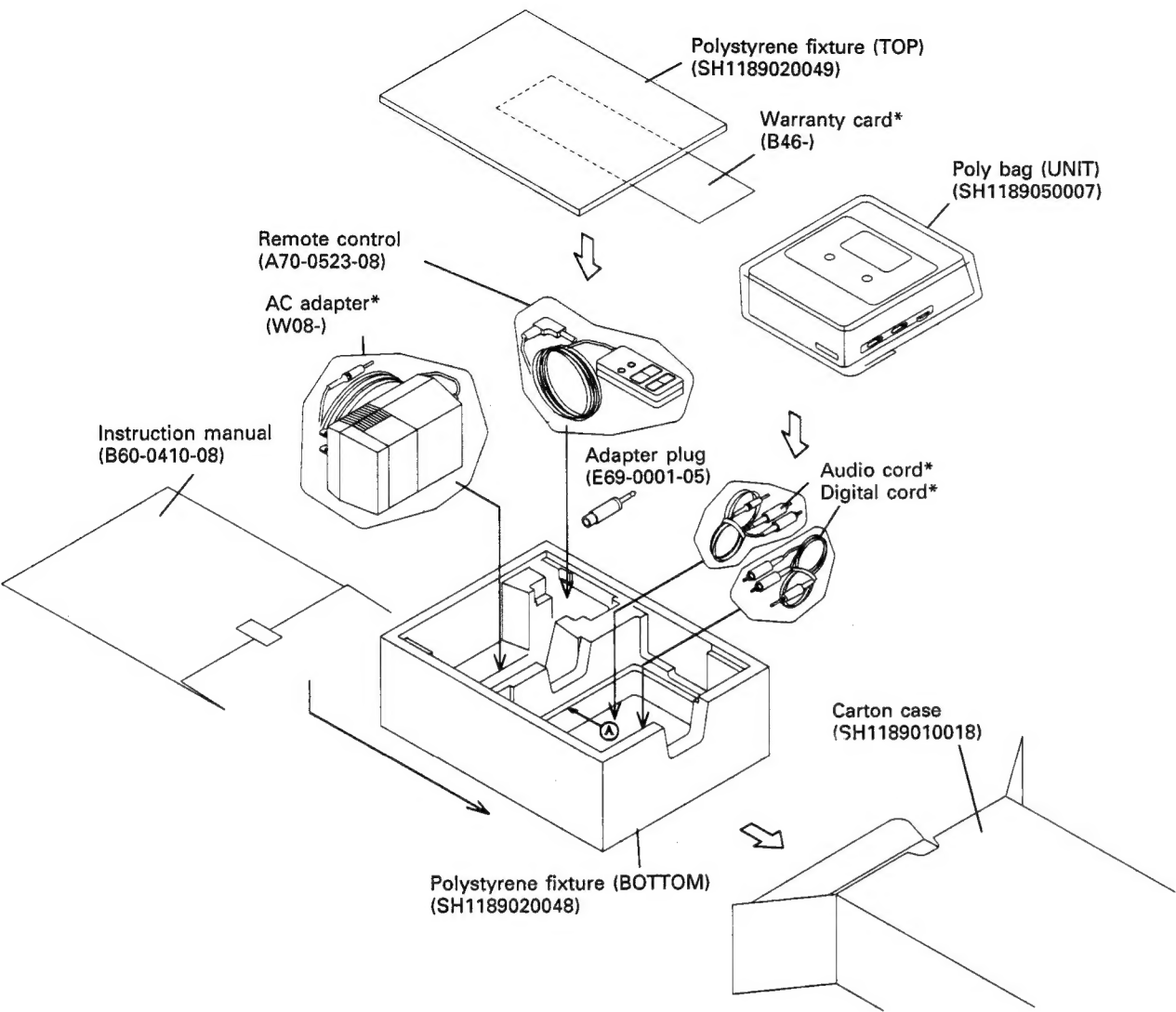
## Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

## Dimension



PACKING (DX-7)

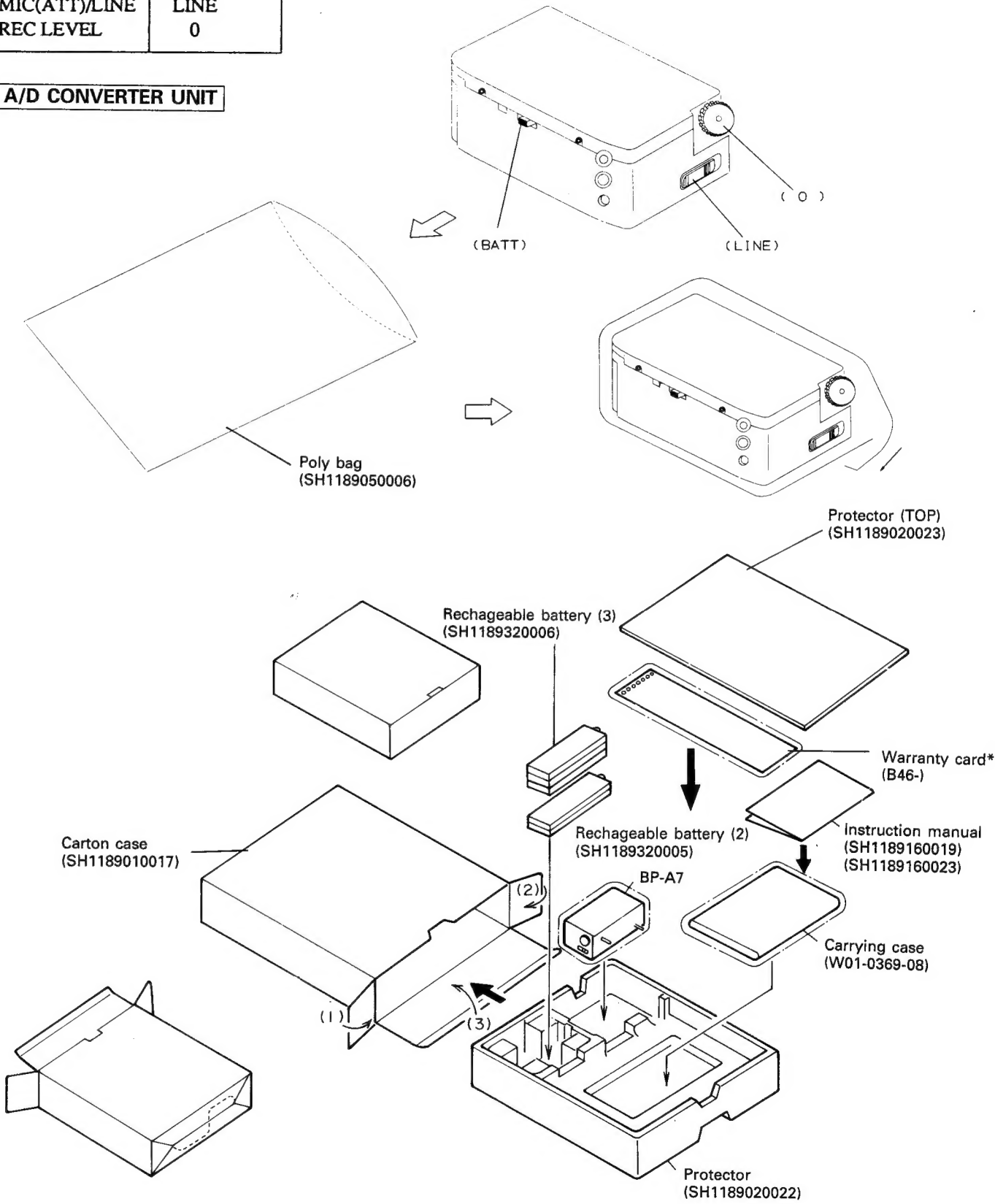


\* Refer to parts list on page 92.

PACKING (BP-A7)

BATT/CHARGE	BATT
MIC(ATT)/LINE	LINE
REC LEVEL	0

A/D CONVERTER UNIT



\* Refer to parts list on page 93.



# DX-7/BP-A7

## SPECIFICATIONS

### [DX-7]

**Tape recording system** ..... DAT rotating head system  
**Tape speed** ..... 8.15mm /sec  
**Sampling frequency** ..... 48kHz / 44.1kHz / 32kHz  
**No. of quantization bits** ..... 16bits, linear  
**Frequency response**  
..... 5 ~ 22,000Hz (EIAJ) (for digital recording)  
**Signal-to-noise ratio** ..... 90dB or greater (EIAJ)  
**Dynamic range** ..... 90dB or greater (EIAJ)  
**Wow & flutter** ..... Below measurable limit (EIAJ)  
**Digital I/O terminal**  
..... Coaxial : 3.5mm diameter 4-pin minijack  
**Analog output terminal**  
..... Headphone: 3.5mm diameter stereo minijack  
**Other terminals** .....  
External power supply input : (DC6V) x 1  
Terminal for connecting separately sold A/D converter BP-A7  
**Battery life (continuous use)** .....  
Approx. 1.5 hours (EIAJ) during playback  
(when connected to separately sold A/D converter BP-A7)  
**Power supply** ..... 6V DC : External DC IN jack  
120V AC, 50/60 Hz : USA and Canada, using the supplied AC adaptor  
110V - 120V / 220V - 240V AC, 50 / 60Hz : All other countries, using the supplied AC adaptor

### Dimensions (main unit)

..... 91.0 (W) x 34.9 (H) x 121.5 (D) mm

### Max. external dimensions (EIAJ, including projections)

..... 91.7 (W) x 36.2 (H) x 121.9 (D) mm

**Weight** ..... Approx. x 420 gr (main unit)

### [BP-A7]

#### A/D converter unit

#### Power supply

6V DC (using 2 rechargeable battery packs / AC adaptor for the DX-7)

#### Battery operating time

About 1.5 hour (playback), or about 80 minutes (analog recording) (after 8 hours of recharging, with DX-7)

**Frequency response** ..... 20 to 22,000Hz (with DX-7)

**Signal-to-noise ratio (S/N)** ..... 85dB (with DX-7)

**Dynamic range** ..... 85dB (with DX-7)

**Total harmonic distortion** ..... 0.01% (with DX-7)

#### Input jacks

LINE input : 350mV (47 kilohm)

MIC input (ATT 0dB) : 1mV (10 kilohm)

MIC input (ATT 20dB) : 10mV (10 kilohm)

3.5mm stereo mini-jacks

**Output jacks** ..... LINE output : 3.5mm stereo mini-jacks

**Dimensions** ..... 91 (W) x 36 (H) x 49.5 (D) mm

**Weight** ..... About 113 grams (without battery packs)

### Note:

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

### Note :

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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